FLIGHT

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM.

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EDITORIAL COMMENT.

The Work of the R.F.C.

Since last week, when we were able to deal with that part of Sir John French's second published despatch referring to the work of the Royal Flying Corps in the field, very little more news has come from the front regarding the wonderful feats of our flying officers and men. We should, naturally, like to know more of what is toward, though we fully appreciate the reasons for the want of news. Something, however, which throws a bright light on the magnificent conduct of our British officers has reached the country through the medium of a descriptive report from an officer on Sir John French's staff, detailed to act as "special correspondent" to the official Press Bureau. The story is well worth quoting as it stands. The staff report says:—

"An incident which occurred some little time ago during our retirement is also worthy of record. On the 28th August, during the battle fought by the French along the Oise, between La Fère and Guise, one of the French commanders desired to make an air reconnaissance. It was found, however, that no observers were available. Wishing to help our Allies as much as possible, the British officer attached to this particular French Army volunteered to go up with a pilot to observe. He had never been in an aeroplane, but he made the ascent and produced a valuable reconnaissance report. Incidentally, he had a duel in the air at an altitude of 6,000 feet with the observer of a German Taube monoplane which approached. He fired several shots and drove off the hostile aeroplane. His action was much appreciated by the French."

With material like this in our little army, it is no wonder that the Germans have come to regard it with a wholesome respect!

◆ ◆ ◆

The Menace of the Zeppelins.

In the same staff report, there is an interesting note with regard to the Zeppelins, of which so little has been seen or heard during the progress of the war. The report says, that in view of the many statements being made in the Press as to the use of Zeppelins against us, it is interesting to note that the Royal Flying Corps, who have been out on reconnaissances on every day since their arrival in France, have never seen a Zeppelin, though airships of a non-rigid type have been seen on two occasions. Near the Marne, late one evening, two such were observed over the German forces. Aeroplanes were despatched against them, but in the darkness our pilots were uncertain of the airships' nationality and did not attack. It was afterwards made clear that they could not have been French.

A week later an officer, reconnoitring to the flank, saw an airship over the German forces and opposite the French. It had no distinguishing mark, and was assumed to belong to the latter, though it is now known that it also must have been a German craft. The orders of the Royal Flying Corps are to attack Zeppelins at once, and there is some disappointment at the absence of those targets.

On the face of it, it seems curious that practically no use has been made of these huge craft of which the Germans, as we know, expected so much. It would, however, be foolish to assume that just because they have done nothing yet the Germans do not intend to make any use at all of them. It may be that they are being held in reserve in order, when the time comes, to operate in conjunction with the German fleet. Alternatively, the Germans may possibly still consider that an aerial raid on the British coasts is feasible, and intend that it shall be carried out by the larger aircraft, while the smaller airships are attached to their armies. Whichever of these theories may be correct—or incorrect, as the case may be—we may be very sure of this, that

Germany has not built her Zeppelins for the mere purpose of allowing them to rot in their sheds. They will certainly attempt to use them, somewhere and somehow.

As for the feasibility of an aerial raid, we dealt with the possibilities in last week's issue of FLIGHT. Nothing has transpired since then to alter or modify the opinions then expressed.

THE R.N. AIR SERVICE RAID ON ZEPPELIN SHEDS.

IN the following statement issued by the Secretary of the Admiralty through the official Press Bureau, the story of the raid by the Royal Naval Air Service pilots on the Zeppelin sheds at Düsseldorf is briefly told. Düsseldorf is on the Rhine about 22 miles north of Cologne, and is about 103 miles from Antwerp. It, with Cologne (the headquarters) and Darmstadt, form the bases of Germany's third Airship Battalion. The statement is as follows :—

"Yesterday British aeroplanes of the Naval Wing delivered an attack on the Zeppelin sheds at Düsseldorf.

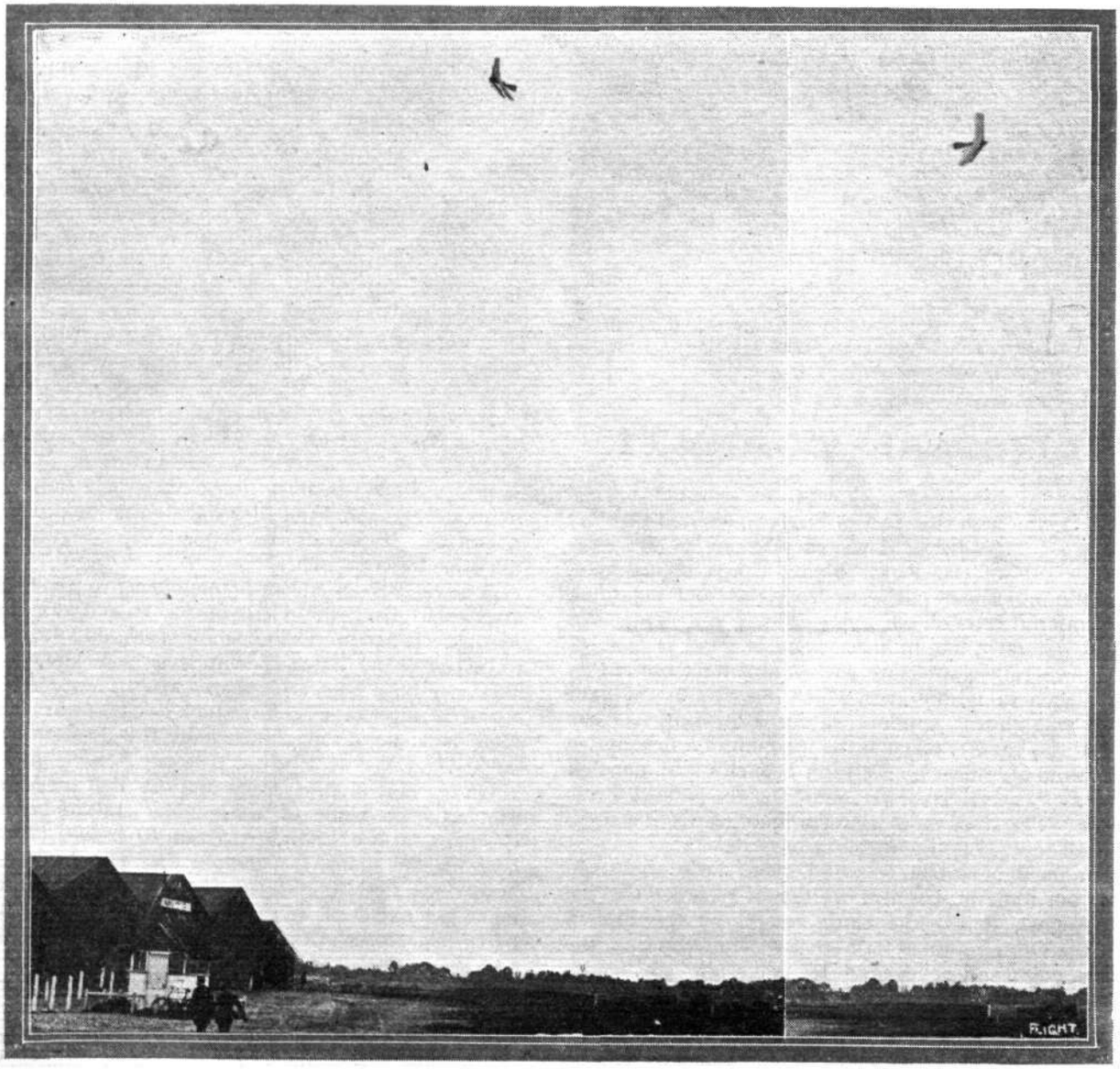
"The conditions were rendered very difficult by the misty weather, but Flight Lieutenant C. H. Collet dropped three bombs on the Zeppelin sheds, approaching within four hundred feet.

"The extent of the damage done is not known.

"Flight Lieutenant Collet's machine was struck by one projectile, but all the machines returned safely to their point of departure.

"The importance of this incident lies in the fact that it shows that in the event of further bombs being dropped into Antwerp or other Belgian towns measures of reprisal can certainly be adopted if desired to almost any extent."

On page 986 further reference is made to this splendid achievement.



Lieut. Collet, R.N.A.S., who took such a prominent part in the air raid on the Zeppelin sheds on Tuesday, will be remembered as doing some notable flying at Brooklands. Above we give a couple of photographs showing him banking steeply on the D.F.W. all-steel Arrow biplane.

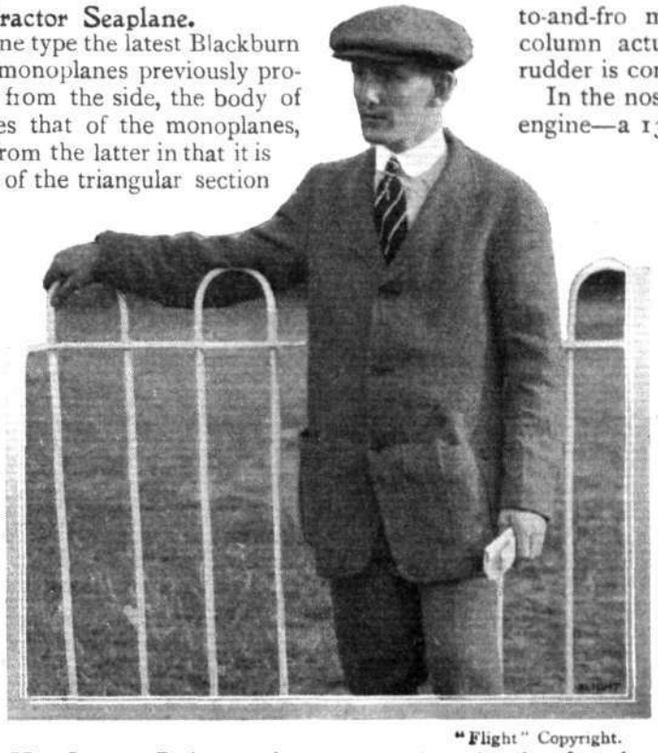
FLIGHT

THE "ROUND BRITAIN" MACHINES.

THE machine which was officially numbered 8 in the Circuit of Britain, and for which Mr. Sydney Pickles had been nominated pilot, was

The Blackburn Tractor Seaplane.

Although being of the biplane type the latest Blackburn follows along the lines of the monoplanes previously produced by this firm. As seen from the side, the body of the seaplane greatly resembles that of the monoplanes, but constructionally it differs from the latter in that it is of rectangular section instead of the triangular section employed in the monoplanes. The four ash longitudinals converge towards the rear, where they join on to a vertical knife edge. Cross bracing is still by diagonal wooden strips instead of the more universally adopted wire bracing. A turtle back extends from the engine cowl back to the tail plane, and has openings cut in it for the pilot and passenger. These sit one behind the other in separate cockpits, with the pilot at the rear.



"Flight" Copyright.

Mr. Sydney Pickles, who was nominated pilot for the Blackburn tractor biplane.

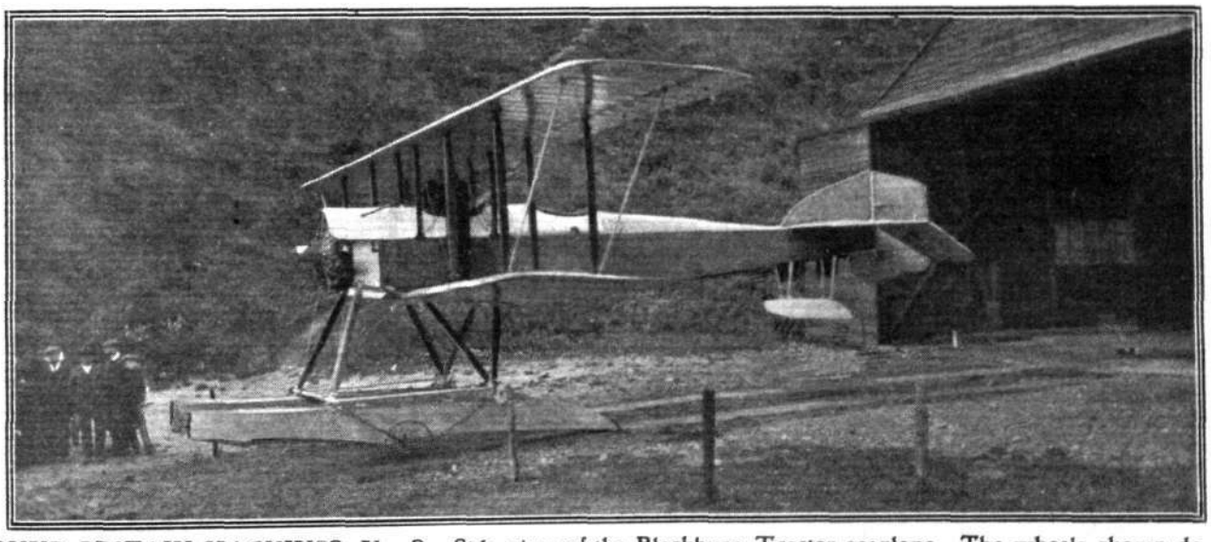
Petrol is carried in two tanks mounted on the upper longitudinals of the body; one in front of the pilot, containing 32 gallons, and a second one in front of the passenger, holding 21 gallons. The front tank is divided by a transverse partition, the front portion containing five gallons of oil, or sufficient for a flight of five hours' duration. The petrol tank in front of the pilot has its rear end sloping slightly forward to form a dash, on which are mounted a complete set of instruments, including revs. indicator, altimeter, compass, clock, &c.

The controls consist of a rotatable hand wheel mounted on a single, central, tubular column, which is, in turn, secured to a transverse rocking shaft, working in bearings on two longitudinal members inside the body. Rotation of the wheel operates the balancing flaps, a to-and-fro movement of the wheel and column actuates the elevator, and the rudder is controlled by a pivoted foot bar.

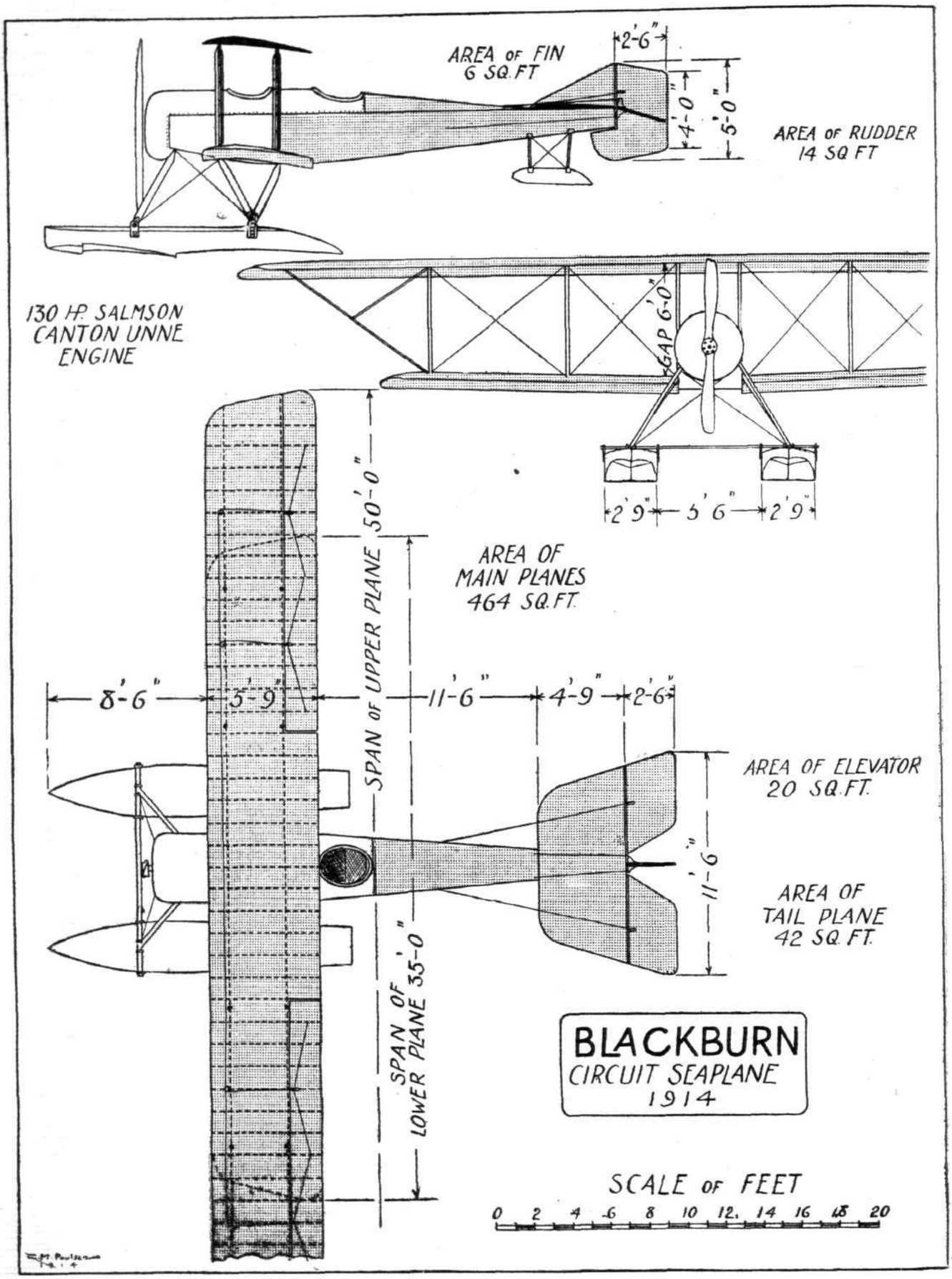
In the nose of the body is mounted the engine—a 130 h.p. Salmson-Canton-Unné motor driving a Blackburn propeller. An aluminium cowl encloses practically the whole of the engine, and extends back in the shape of a turtle-back, over the top of the body.

The main planes, of which the lower one only is set at a dihedral angle, are characterized by having their trailing edge longer than the leading edge. Balancing flaps are hinged to the trailing edge of the top plane only. These are inter-connected by cables passing over pulleys on top of the upper plane, and running across to the corresponding pulleys on the other side. From the lower surface another series of cables pass from the balancing flaps to the control wheel. The main planes are braced internally and fitted with stout compression struts between the spars. Two pairs of interplane struts connect the planes on each side of the body, and cable bracing is employed.

At the rear of the *fuselage* is a set of tail planes, consisting of a cambered, fixed tail plane, a divided elevator, a vertical fin and a balanced rudder. A small float, supported from the body on four steel tubes, takes the weight of the tail planes when the machine is at rest.



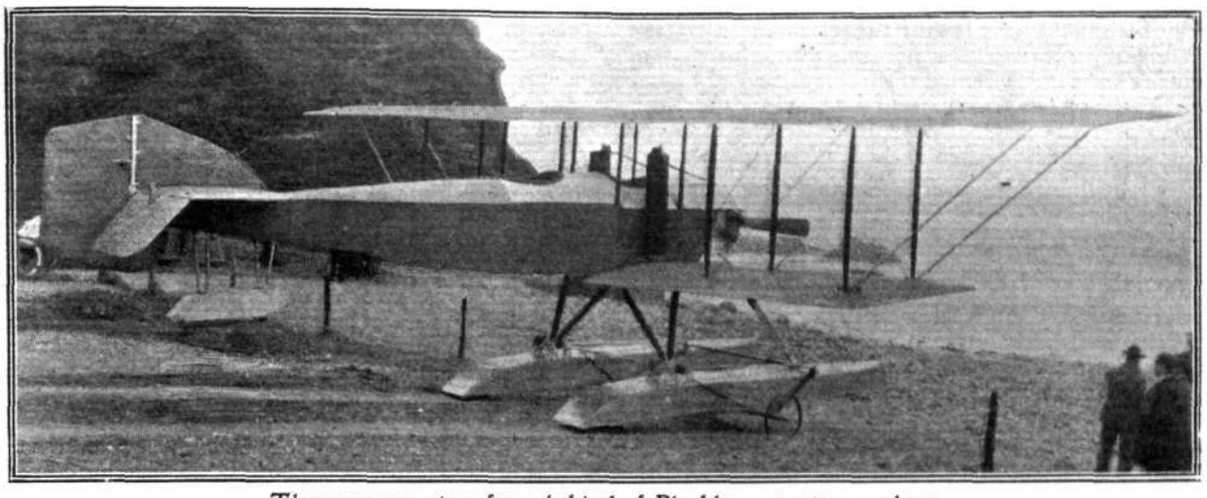
ROUND BRITAIN MACHINES, No. 8.—Side view of the Blackburn Tractor seaplane. The wheels shown do not form part of the chassis, but are merely used for running the machine down to the water.



ROUND BRITAIN MACHINES, No. 8.—The Blackburn tractor biplane. Plan, side and front elevations to scale.

The control cables, which are all in duplicate, pass from crank-levers on the directional organs, through openings in the body, to the controls.

Carried on a structure of strong wood struts are the two main floats, which are of the stepped type. Near the nose the floats have a pronounced Vee bottom, which gradually flattens out towards the third step, which is flat in section, although having a marked camber, as seen from the side. The sides of the floats are flat and vertical, and a curved deck allows the water to run off quickly. The chassis struts, of which there are three to each float, run from the junction of the main spars to the body and from a point immediately under the engine, respectively. The lower ends of the struts are attached to transverse steel tubes, tying them together, and the floats are secured to the transverse tubes by steel clips, as seen in the accompanying illustrations.



Three-quarter view from behind of Blackburn tractor seaplane.

The weight of the machine empty is 1,500 lbs. and loaded about 2,200 lbs. A speed range of from 45 to 75 m.p.h. is anticipated.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

COMMITTEE MEETING.

A SPECIAL Meeting of The Committee was held on Tuesday, September 22nd, 1914, when there were present:—Prof. A. K. Huntington, in the Chair, Mr. Griffith Brewer, Mr. Ernest C. Bucknall, Mr. C. F. Pollock, and the Secretary.

Aviators' Certificates.—The following Aviators' Certificates were confirmed:—

897 Capt. Arthur Douglas Gaye (Avro Biplane, Central Flying School, Upavon). Sept. 8th, 1914.

898 Cyril Marconi Crowe (Grahame-White Biplane, Grahame-White School, Hendon). Sept. 8th, 1914.

899 Flight Sub Lieut. Ralph Whitehead, R.N.A.S. (Grahame-White Biplane, Grahame-White School, Hendon). Sept. 8th, 1914.

900 Flight Sub-Lieut. Ralph James Hope-Vere, R.N.A.S. (Grahame-White Biplane, Grahame-White School, Hendon). Sept. 9th, 1914.

901 William Roche Kelly (Wright Biplane, Beatty School, Hendon). Sept. 9th, 1914.

902 Charles Henry Butler (Henry Farman type Biplane, Pashley School, Shoreham). Sept. 6th, 1914.

903 Corporal Frederick Adams, R.F.C. (Maurice Farman Biplane, Central Flying School, Upavon). Aug. 20th, 1914.

The following Aviators' Certificates were granted:—

904 Lieut. Henry Graham Lambarde Mayne (K.O.S.B.) (Avro Biplane, Central Flying School, Upavon). Sept. 9th, 1914.

905 Robert Maxwell Pike (Bristol Biplane, Military School, Brooklands). Sept. 21st, 1914.

906 Flight Sub-Lieut. The Hon. Desmond O'Brien, R.N.A.S. (Maurice Farman Biplane, Central Flying School, Upavon). Sept. 21st, 1914.

Daily Mail Circuit of Britain Race.

The Proprietors of the *Daily Mail* have intimated to the Royal Aero Club their intention to refund to the Club the expenses incurred in connection with the organisation of the above race, which was indefinitely postponed on account of the War. This action on the part of the *Daily Mail* will enable the Club to return the full amount of the Entrance Fees to the Competitors.

At a meeting of the Committee held on Tuesday last, a unanimous vote of thanks was passed to the Proprietors of the *Daily Mail* for their generosity.

Secretary.

Mr. Harold Perrin, the Secretary, has been Gazetted a Lieutenant in the Royal Naval Volunteer Reserve for duty in connection with the Naval Air Service. The Committee of the Club at its meeting on Tuesday last agreed to pay his full salary during his absence on active service. Mr. Perrin left for service abroad on Thursday last.

HAROLD E. PERRIN, Secretary.

166, Piccadilly, W.

Legion of Honour for the R.F.C.

MAJOR HIGGINS, D.S.O., Squadron Commander of the Royal Flying Corps at the front, writing to a friend at Farnham, is reported to have stated that the corps has been decorated by the French with the Legion of Honour.

A New Zeppelin Reported Ready.

ACCORDING to information *via* Amsterdam, a new Zeppelin, Z26, has been completed at the works at Friedrichshafen. It may be pointed out that the number 26 is only a works number indicating the order in the list of craft built in the Zeppelin works.

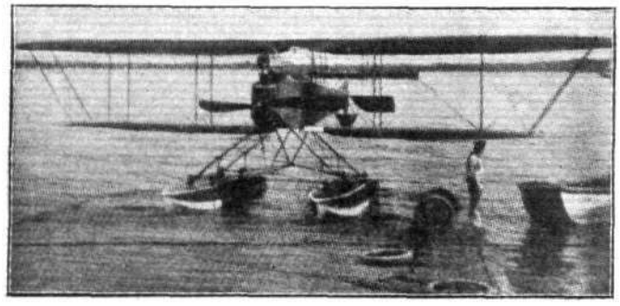
AIRCRAFT "MADE IN GERMANY"

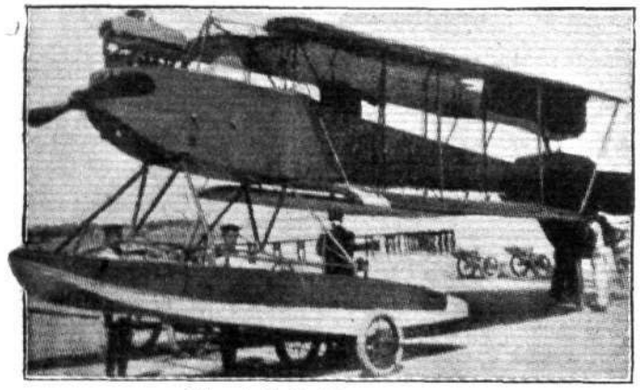
WHICH MAY BE EMPLOYED AGAINST THE ALLIES.

(*Continued from page* 960.)

WATERPLANES.

ALTHOUGH comparatively few of the German aeroplane constructors have turned their attention to the production of machines specially designed for use over water, a great number of them have nevertheless at some time or other





1. The A.E.G. Tractor seaplane.

experimented with land machines fitted with floats, and a perusal of the accompanying table will show that the majority of the seaplanes contained therein are of this type.

There are, however, several new machines of the flying boat type which have for the greater part been built quite recently, and of which therefore data as to performances are not available, but which follow more or less closely along lines adopted in other countries, notably America. The accompanying table does not pretend to be a complete list of German waterplanes, as a great number of the better-known land machines may be converted into seaplanes by the simple expedient of fitting floats instead of wheels, but we have included in it such machines as give an idea of the general trend of design.

1. The A.E.G. Seaplane

is a newcomer into the German waterplane industry. The machine illustrated hereby was designed for the Warnemunde-Scandinavia Race, and is chiefly interesting on account of the wing mounting, which is such that the main planes can be folded back along the body for purposes of transport. The rectangular section body tapers towards the nose, where is mounted the 150 h.p. Benz engine. Aluminium sheeting with inspection doors covers the front portion, whilst the rear part is covered with fabric. The two seats are arranged in tandem, the pilot occupying the rear one. By undoing the drag wires running to the *fuselage* the main planes can be folded along the sides of the body, the lower ones passing underneath it. The whole operation of folding the wings can be accomplished in under two minutes.

The two main floats, which are of the single step type, are built up of two skins of mahogany over a framework of ash, and are fitted with bulkheads dividing them into watertight compartments. As the floats are of ample size—their displacement is three times the weight of the machine—they float very high on the water when the

WATERPLANES "MADE IN GERMANY."

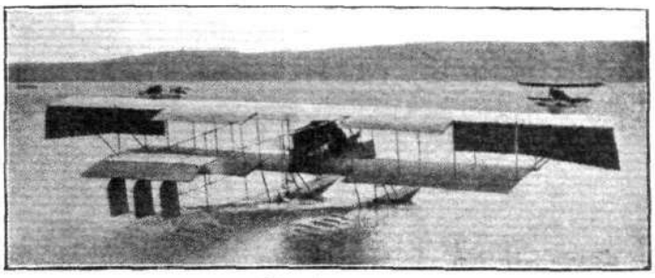
Reference No.	Make of Machine.	Where Built.	Type.	No. of Seats.	Span (in ft.).	Length (in ft.).	Area (in sq. ft.).	Weight. Empty.	Weight. Loaded.	Fuel Capacity (hours).	Speed (m.p.h.).	Radius of Action.	No. of Main Floats.	Engine.	Type.	No. of Cyls.	h.p.
					ft. in.	ft. in.		lbs.	lbs.			miles					
1	A.E.G. ...	Hennigsdorf (Berlin)	T.B. ...	2	52 6	—	—	—	—	—	65	—	2	B.	Vert.	6	150
2	Ago ...	Johannisthal ...	P.B. ...	2	61 0	39 0	—	—	—	4	62	124	2	A.	Vert.	6	150
2a	Ago ...	Johannisthal ...	P.B. ...	2	54 0	34 6	—	1870	2400	4	56	112	2	A.	Vert.	6	150
3	Ago ...	Johannisthal ...	T.B. ...	2	—	—	—	—	—	—	—	—	2	—	—	—	—
4	Albatros ...	Johannisthal ...	T.B. ...	2	50 6	31 6	—	—	—	4	60	120	2	A.†	Vert.	4	100
5	Albatros ...	Johannisthal ...	P.B. ...	2	70 0	41 3	—	—	—	—	56	—	2	A.†	Vert.	4	100
6	Albatros ...	Johannisthal ...	Taube ...	2	43 6	27 0	—	—	—	4	62	124	2	M.	Vert.	6	100
7	Albatros ...	Johannisthal ...	T.B. ...	2	—	—	—	—	—	—	—	—	2	M.	Vert.	6	160
8	Aviatik ...	Mulhouse ...	T.B. ...	2	—	—	—	—	—	—	—	—	1	A.	Vert.	6	190
9	D.F.W. ...	Leipzig	F.B. ...	2	55 0	34 6	680	1800	2320	4	62	124	Bo.	M.	Vert.	6	100
10	Euler ...	Frankfurt	P. Triplane	2	46 0	—	—	—	—	—	—	—	Bo.	G.	R.	9	100
11	F.F. ...	Friedrichshafen ...	T.B. ...	2	50 0	33 0	—	—	—	—	65	130	2	N.A.G.	—	—	135
12	F.F. ...	Friedrichshafen ...	F.B. ...	2	55 0	—	—	—	—	—	—	—	Bo.	B.	Vert.	6	150
13	F.F. ...	Friedrichshafen ...	P.B. ...	2	49 3	33 0	456	1960	2480	—	68	136	1	—	—	—	135
14	Fokker ..	Schwerin	Bi.	2	52 6	33 0	510	1850	2290	—	62	—	1	M.	Vert.	6	100
15	Gotha ...	Gotha	F.B. ...	2	50 0	34 0	540	1430	1980	—	56	—	Bo.	G.	R.	9	100
16	Rumpler ...	Johannisthal ...	Taube ...	2	47 0	34 0	—	—	—	—	—	—	2	M.	Vert.	6	100
17	Rumpler ...	Johannisthal ...	F.B. ...	2	49 3	—	540	—	—	4½	—	—	Bo.	B.	Vert.	6	150

Bi. = Biplane. Bo. = Boat. F.B. = Flying-boat. P.B. = Propeller or "Pusher" biplane. T.B. = Tractor biplane.
A. = Argus. B. = Benz. G. = Gnome. M. = Mercedes. N.A.G. = Neue-Automobil-Gesellschaft. R. = Rotary.
† Also supplied with 100 h.p. 6-cyl. Mercedes.

machine is at rest. The floats are carried on a framework of streamline steel tubes, to which they are attached, each by four rubber shock-absorbers. In addition to the usual equipment, a complete set of instruments for wireless telegraphy is carried.

2. The Ago Seaplane

is of the engine-behind or "pusher" type. It is characterised by a peculiarly-shaped *nacelle*, which is very deep in front and runs to a horizontal knife edge at the rear. The engine—a 150 h.p. Argus—is mounted in the rear of the *nacelle*, and a short distance above the upper



2. The Ago seaplane.

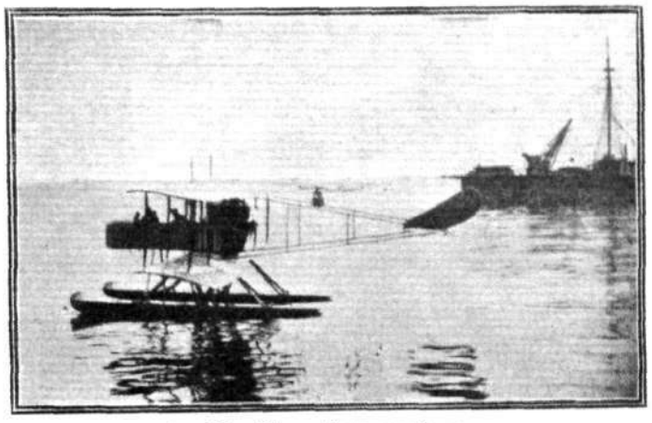
longitudinals. The centre portion of the trailing edge of upper and lower planes has been cut away in order to provide a clearance for the propeller. In front of the engine are the two seats arranged tandem fashion, the pilot occupying the front seat. To the trailing edge of the upper main plane, which has a considerable overhang, are fitted *ailerons* of large area. These have a greater chord at their outer ends than at the root, in order to render them more efficient.

Carried on an outrigger consisting of four tail booms connected with struts and cross-members, and diagonally cross braced, are the tail planes, which consist of a slightly cambered fixed tail plane, to the trailing edge of which is hinged an undivided elevator, and of three vertical rudders. Two cylindrical tail floats take the weight of the tail planes when the machine is at rest.

The two main floats, which are of the plain non-stepped type, are carried on a framework of steel tubes coming down from the lower main plane. In addition to the floats, four wheels are fitted for use over land. These wheels can be raised clear of the water by means of a lever in the pilot's cockpit when it is desired to start the machine from the sea.

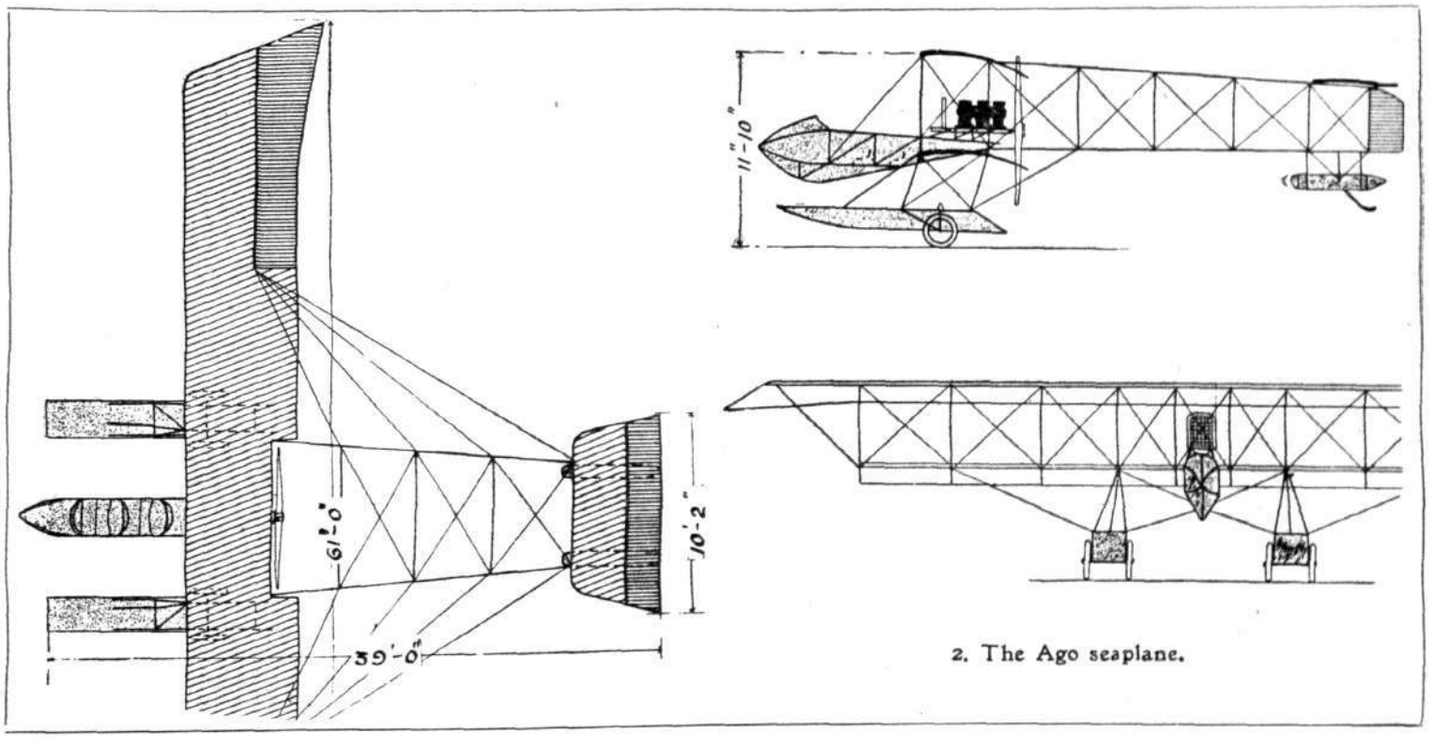
2a. The New Ago Seaplane

is a later type than machine No. 2, having been designed for the Warnemunde-Scandinavia Race. In some respects it is reminiscent of the Wight seaplane, especially as regards the long floats and the *nacelle*. The former are of the displacement type in front, running out to a flat bottom at the rear. Air is admitted to the step by means of metal tubes passing through the interior of the float and sloping slightly backwards. Connection between floats and *nacelle* is by means of stout ash struts, as this firm is of opinion that good ash is more suitable than steel for seaplane work.



2A. The New Ago seaplane.

The *nacelle* projects a considerable distance out in front of the main planes and is fitted in front with a wind-screen. The two seats are arranged one behind the other, the pilot

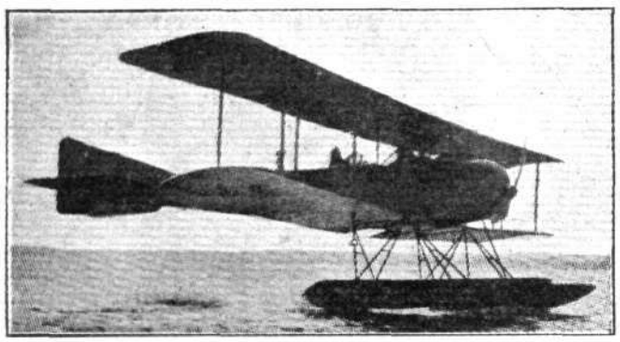


2. The Ago seaplane.

sitting in front. The tail planes are carried on an outrigger, and consist of a fixed stabilising plane, elevator, vertical fins and rudder. The vertical area of fins and rudders does not appear to be sufficient to counteract the large side area of the *nacelle* and the two long floats, although the rear portion of the *nacelle* and the engine are to the rear of the c.g. With a 150 h.p. Argus engine the speed of this machine is 56 m.p.h.

3. The Ago Tractor Seaplane

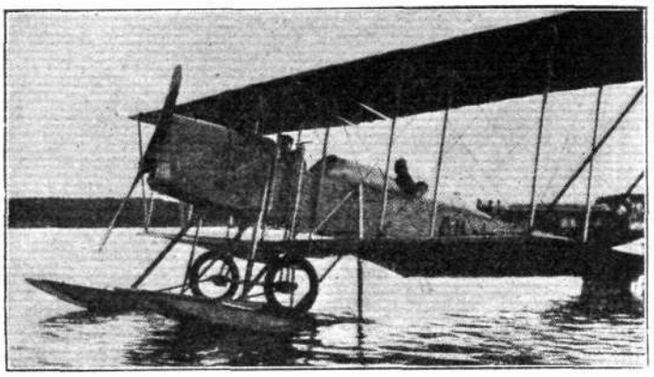
is a *fuselage* biplane, with accommodation for pilot and passenger sitting one in front of the other. Of the main planes, which are set at a dihedral angle, *ailerons* are fitted to the upper one only. The two floats are of the single stepped type, and are carried on a series of A steel tubes attached to the lower plane at its junction to the inner pairs of interplane struts.



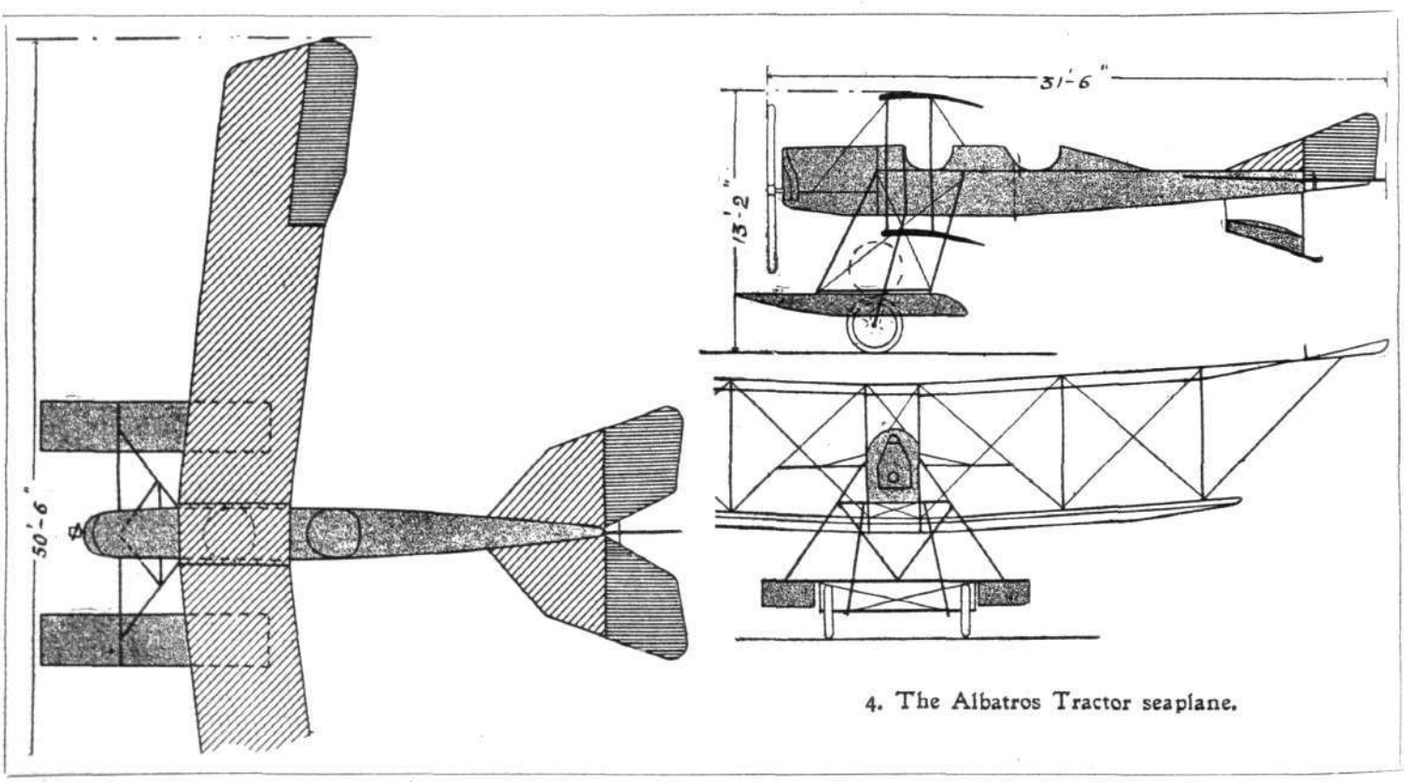
3. The Ago Tractor seaplane.

4. The Albatros Seaplane

is similar to an earlier type of this firm's land machines. The body, which is of rectangular section, is very deep and narrow, and is placed a short distance above the lower main plane. The engine—a 100 h.p. Argus or a Mercedes of the same power—is placed in the nose of the body, and is entirely covered in. The radiator forms the extreme nose of the body, and the air passing through the radiator is allowed to escape through louvres in the side of the body. Behind the engine is the passenger's cockpit, whilst still further back, and some distance behind the trailing edge of the planes, is the pilot's seat. The two main floats, which are of the plain non-stepped type, are supported on very stout streamlined steel tubes. This machine is of the amphibious type, since it is fitted, in addition to the floats, with two wheels which may be raised clear of the water. A small tail float protects the tail planes against contact with the water. The main planes are set at a dihedral angle in addition to their backward slope, and *ailerons* are hinged to the outer ends of the upper plane.



4. The Albatros Tractor seaplane.



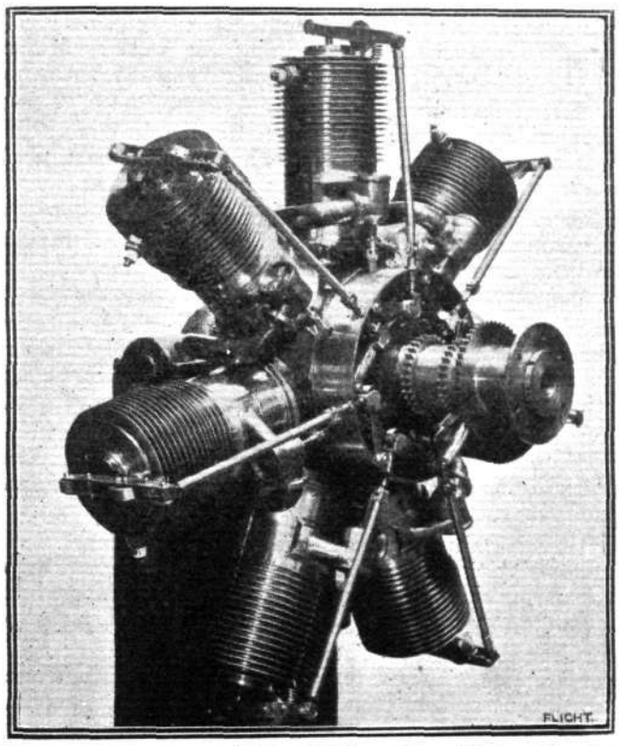
4. The Albatros Tractor seaplane.

(*To be continued.*)

THE NEW 80 H.P. DUPLEX GYRO ENGINE.

VALVE trouble has been, and in some cases, still is, one of the most important factors, which place limits upon the endurance of aeronautical engines; and the improved performance of modern engines is largely due to the attention which has been given by designers to the elimination of such defects. This has been especially so in the case of engines of the rotary type in which the inlet valve is located in the piston, as apart from difficulties associated with access to that part, the valve is, because of its position, very imperfectly cooled; and it is not, therefore, surprising that certain well-known makers have discontinued the manufacture of models in which the valve is so placed.

In the latest Gyro engine, manufactured by the Gyro Motor Co., of U.S.A., a special piston valve, which controls the exit of a part of the exhaust and the entrance

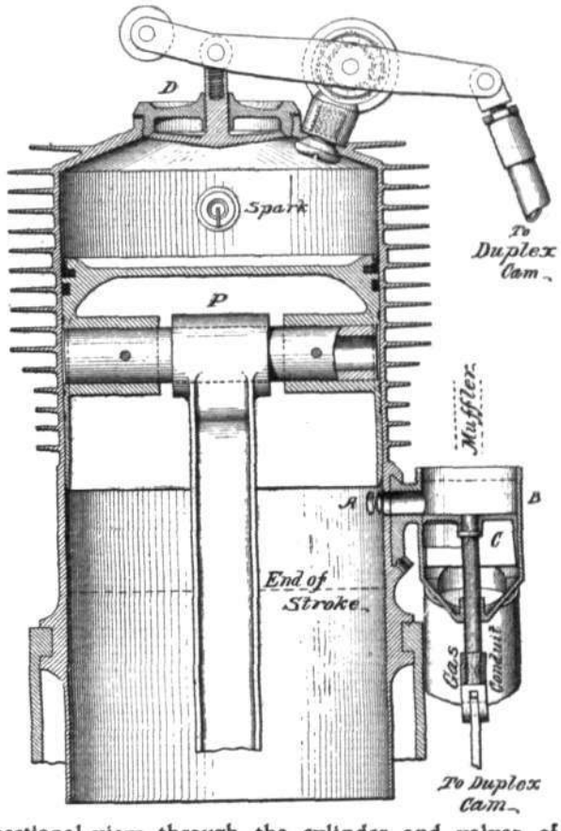


Three-quarter view of the 80 h.p. Gyro Motor, showing valve operating mechanism.

of the fresh carburetter air, is substituted for the valve in the piston, which, in the old model, was mechanically operated by a lever mounted upon the end of the connecting rod (see *Flight*, January 25th, 1913). Several of the old type of motors have been rendering excellent service at the Beatty School at Hendon during the past year. Otherwise than in valve gear, this engine embodies practically the same construction as its predecessor, and we can, therefore, confine our attention to the new features which have been introduced.

The accompanying illustrations show the internal construction and the assembled arrangement of the motor. The main exhaust valve, D, is as previously fitted in the head of the cylinder, and is operated by an overhead rocking lever and push rod from a cam mounted in a separate compartment at the end of the crankcase. This cam is of the duplex type, one side operating the main exhaust valve, D, whilst the other side controls the movement of the piston valve, C. The latter moves within a casing, B, mounted in circumferential grooves formed on the wall of the cylinder in the vicinity of the ports, A, which function alternately as auxiliary exhaust ports and as gas intake ports. The casing, B, communicates at its outer end with the atmosphere or with the common exhaust muffle, if fitted, for which purpose a screwed connection is provided, while the inner end is enclosed, and from the side a lead through which the carburetted charge is drawn is taken to a casing on the opposite side of the crankcase.

The mode of operation of the gear is extremely simple. On the power stroke the two pistons, P and C, move towards the crank-shaft, uncover both faces of the auxiliary ports, A, and thus permit the main portion of the burnt gases to escape into the atmosphere. The piston, P, continues to descend for a distance of about two inches, closes the auxiliary exhaust port and then returns, scavenging out the remaining gases through the main exhaust valve, D. On the next stroke of the engine, the induction stroke, the valve, D, is kept open until just before the upper edge of the piston reaches the auxiliary ports, A, thus admitting pure air into the cylinder. But in the meantime, the valve, C, has descended to its limit of travel, returned, and its lower edge has uncovered the



A sectional view through the cylinder and valves of the 80 h.p. Gyro Motor.

outside of the ports, A; so that when the inner ends of the ports are uncovered by the piston, P, communication is made with the gas mixing chamber; and during the remainder of the induction stroke a rich mixture is drawn into the cylinder. The piston and the piston valve then move outwards, close the auxiliary ports, A, and the main piston performs the compression stroke.

Two special advantages accrue from the adoption of

the particular construction shown in this engine. In the first place—the great objection to the use of auxiliary exhaust ports, namely, that on the induction stroke, the air entering through them upsets the carburation, is entirely overcome, since these ports are employed for the purpose of admitting the carburetted air. And secondly, there is only the one valve per cylinder subject to full pressure at ignition.

It is stated that this engine, which weighs 200 lbs. fully equipped with pumps, fuel inspirator, magnetos and tachometer, develops 80 B.H.P. at 1,250 revs. per min.; while the oil consumption is four pints per hour.

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FROM THE BRITISH FLYING GROUNDS.

Royal Aero Club Eastchurch Flying Grounds.

Naval Flying.—It has been very windy all last week, so that air work was less in evidence. Machines up were 1, 2, 62, Flight Com. Maclean (Shorts), Vickers gun 'bus, Bristol tractors, Sopwith.

5 officers left for service on Wednesday, one coming down at Deal.

Civilian Flying.—Mr. Alec Ogilvie was out on Tuesday on his 50 h.p. Wright.

Mr. Lionel Seymour Collins, who took his Royal Aero Club's certificate at the Bristol School, Brooklands, last month, and who is one of many who have offered their services to the Royal Naval Air Service.

London Aerodrome, Collindale Avenue, Hendon.

Grahame-White School.—Sunday, last week, Sub-Lieut. Giles straights with Instructor Russell.

Tuesday, Sub-Lieut. England, Messrs. Morgan and Polehampton straights with Instructors Russell and Winter. Sub-Lieuts. Groves and Hart rolling with Instructors Winter and Russell.

Wednesday, Sub-Lieuts. Allen and Rosher solo straights. Messrs. Carabajal, Easter, and Sub-Lieuts. England, Groves, Haines, Hart, Perry, Riggal and Field, and Messrs. Polehampton and Stalker straights with Instructors Winter and Russell. Mr. Wiles circuits and figures of 8. Sub-Lieut. Strong solo circuits.

Beatty School.—During last week the following pupils received instruction from Mr. G. W. Beatty on a "dual controlled" biplane during the week:—Messrs. C. H. C. Smith, Virgilio, Lord, Hornby, Aoyang, Parker, Whitehead, Jenkinson, Leeston-Smith, Beard, Beynon, MacLachlan, and Lieut. Rimington.

British Caudron School.—On Monday, last week, too windy for school work.

Tuesday, school was out at 6 p.m. under the instruction of R. Desoutter and R. M. Murray. Messrs. Barfield, Legh, Ivermee and Moon rolling practice.

Wednesday, school at 6 a.m. Trial flights by instructors. Messrs. Ivermee, Moon, Legh, Henderson and Dr. Christie rolling. Mr. Abbott doing straights.

Thursday, Friday and Saturday too windy for school.

Hall School.—Monday and Tuesday last week a gale prevented school work.

Wednesday, Mr. Rose two fine straights in fine style and improving considerably. Mr. Brynildsen (Norwegian pupil) six straights and rollings improving.

Thursday and Friday, gale again.

Saturday, Mr. Rose four straights and short flight. Mr. Brynildsen six straights, improving in landings.

London and Provincial Aviation Co.—Monday and Tuesday last week too windy for practice.

Wednesday, school out 5 a.m. Mr. W. T. Warren test flight on new school biplane, 35 h.p. machine, climbing exceedingly well; 15 minutes' flight at 400 ft. Pupils: Mr. W. White first lesson, rolling alone for half-an-hour, making very good progress. Mr. C. L. Davidson also had first lesson, rolling successfully and negotiating ammunition wagons with much skill; half-an-hour's work. Mr. M. G. Smiles (late Grahame-White School) two straight flights.

Thursday, too windy for school. All staff busy on two new school machines.

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"All the World's Aircraft."

ONE effect of the war has been that this year's edition—the sixth—of Mr. F. T. Jane's annual "All the World's Aircraft" has been published a month sooner than was intended. In view of the important part which aircraft are playing in the war, however, the appearance of the book is most opportune, as although a great deal of interest is being taken in the subject by the general public a good many people have but very mixed and vague ideas as to the types and numbers of aircraft owned by the various powers of the world. Mr. Jane has been at considerable pains to see that the information contained in the book has been brought up to date, but it has been deemed necessary to eliminate particulars relating to the latest equipment of the British Army and Navy. That is, of course, something which no one will grudge, especially remembering the unstinted praise which the Royal Flying Corps has won from Field-Marshal Sir John French and General Joffre. At the same time full details are given regarding the aeroplanes and airships built and used in France, Germany and Russia, and practically every nation in the world. As in previous issues, there is a wonderful array of photographs and drawings, so that it is possible to get a general idea of practically every type of aircraft mentioned. The book is published at 21*s.* net by Messrs. Sampson Low, Marston and Co.

FLIGHT

EDDIES.

IF the British Government does not look alive and acquire the following invention, particulars of which were sent to our American contemporary *Aeronautics*, there is the danger the Germans may be quick to realise its possibilities, in which case we might as well pack up. Should, on the other hand, our Government succeed in obtaining a few of these wonderful machines, the war should be over in a day or two. The communication sent to our contemporary (*plus* some editorial interpolations in italics), and which was signed E. S. Nelson, secretary, runs as follows :—

"GENTLEMEN,—A flying machine, known as the 'Helicopter-Hydro-Airship,' has been invented and patented by a mechanic of this city (San Francisco, Cal.), by name H. Van Wie, which is a successful combination of parachute and planes, insuring safety, lifting power and speed. It is entirely different from present flying machines, and as far superior to all of them as the modern electric train is superior to the old stage coach. It is destined to revolutionize, not only methods of flying, but all methods of transportation, and will have a radically revolutionary effect on everything.

"You are most cordially invited to investigate :—

"1. It leaves the ground or water at once (*no waiting*). 2. Alights straight down (*plonk !*). 3. Has 400 per cent. lifting and sustaining capacity (*Gee ! !*). 4. Is absolutely non-collapsible (*not like some present day machines which collapse if they hit the ground at a trivial speed of* 80 *m.p.h.*). 5. Can remain stationary in the air, with the aid of the helicopter (*wouldn't that give the correspondents a chance of revelling in descriptions of the 'hovering' bird?*). 6. An average speed of 500 m.p.h. is a conservative statement (*talk about our Sopwith and Bristol scouts, why, they won't be in it*). 7. Passengers, aviators, and engines are protected by enclosures (*half-crown, shilling and sixpence, presumably !*). 8. Propeller has twice the efficiency of the old ; two revolve in opposite directions on one shaft ; three twin screws provide more than six times the power of the average aeroplane, with much less resistance. (*Now then, Mr. Integral, what about your wind-sticks ?*). 9. Carries duplicate of everything, including engine (*new machine can be built in*

Mr. A. Delfosse Badgery in the seat of his Anzani-engined biplane at Sutton Forest, New South Wales. On Sunday, July 19th, Mr. Badgery was up to over 2,000 feet, taking the air in 20 yards, and climbing the first 1,000 feet in 2 minutes 45 seconds. The distance travelled during the day was 30 miles, despite the somewhat high winds.

View of the biplane which Mr. Delfosse Badgery has built in Australia, and which is fitted with a 45 h.p. Anzani motor.

mid-air if necessary). 10. Can be repaired while in flight (*pretty draughty job tho', when travelling at* 500 *m.p.h.*). 11. Has highest efficiency with lowest loss of energy (*some efficiency! Eh!!*). 12. Has no oscillation (*doesn't get the time, you see*). 13. No noise from the propellers (*that whistling noise* IS *beastly boring, don't you think?*). 14. No top suction (*very good feature, as the fabric might otherwise be 'sucked' right off the planes*). 15. Is in itself an automatic stabilizer (*no 'scientific' experiments allowed*). 16. Can be run by a 12-year-old boy (*quite a handy little plaything*). 17. Can be built any size (*in Sikorsky size it should be just the thing for transporting troops from Russia to France*). 18. Is equipped with all modern conveniences (*hot and cold*). 19. Is made portable, but need not be shipped as it can be flown anywhere.

"Mr. Van Wie intends to build a 12-passenger, 2-aviator machine. It will take less than three months to build, and cost about £3,000. If you are interested financially, I shall be very glad to hear from you.

"Yours truly,

"E. S. NELSON, Secretary."

The appeal is addressed from 335, Leavenworth Street, San Francisco, Cal., U.S.A. And to think that all this is going for a paltry sum of a few thousand pounds!

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A friend of mine has related to me the following incident that occurred during his visit to Teignmouth, South Devon, a little while back, which shows how rumours and scares arise. Just before "turning in" one very dark night he sallied forth from his hotel overlooking the river for a final airing, and was greeted with the unmistakable sound of an aero engine. Whilst he was searching the sky overhead, he was joined by two other visitors, one of whom remarked that it was undoubtedly a German aircraft come over to drop bombs, as he recognised the sound! Suddenly, his companion, pointing out to sea, cried, "Look, a Zeppelin!"—a cry which brought others upon the scene. Yes, sure enough, there was the ghost-like form of a Zeppelin emerging from behind the headland at the mouth of the river. They had no sooner observed this terror of the sky when it doubled up and "sort of melted away," as some one put it, and then all was silent. "Then," said my friend, "I realised that we had been nicely taken in—but how?" Well, to cut a long story short, it was nothing more nor less than a tramp steamer being towed out to sea—a difficult operation at this port owing to the narrowness of the river mouth. The aero engine was the combined vociferation of a donkey engine and the emission of exhaust steam. The latter, faintly illuminated by a ray of light apparently from the cabin of the tramp steamer, was our "Zeppelin." Yet, in spite of this simple explanation—which was arrived at after much deliberation—there were several who refused to be convinced, although they had seen many a ship towed out of that port. In fact, one old local was quite annoyed that there should be any suggestion that it was not a real, live Zeppelin.

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Although it may not be generally realised, the excellent reputation enjoyed by Hendon before the war for invariably providing flying practically regardless of the weather has been maintained right away from the outbreak of hostilities. Knowing that the greater part of the flying done there these days is in the nature of school work one would hardly have expected to see any machines in the air on Saturday last by reason of the strong wind, but true to traditions, several flights as a matter of fact were made. The first out was Birchenough, who was testing a new M. Farman previously to taking it to Farnborough. After a few circuits he landed in his usual inimitable way, and after taking a passenger on board, rose again, quickly disappearing away over the Welsh Harp. Later in the evening the wind dropped a little, when Merriam had one of the naval M. Farmans brought out and put in several very good flights, first solo and later with passengers. Merriam evidently finds no difficulty in handling this—to him—new mount.

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Since the early part of the war when only a few school machines were left at Hendon, matters have greatly changed, and there are now out there representatives of of nearly all the English aeroplane constructors: G.W's., Avros, Sopwiths, Caudrons, H. and M. Farmans, Deperdussins and Handley-Pages. In majestic solitude reposes in one of the sheds an R.E., the colour scheme of which is only approximately equalled by Manton's socks.

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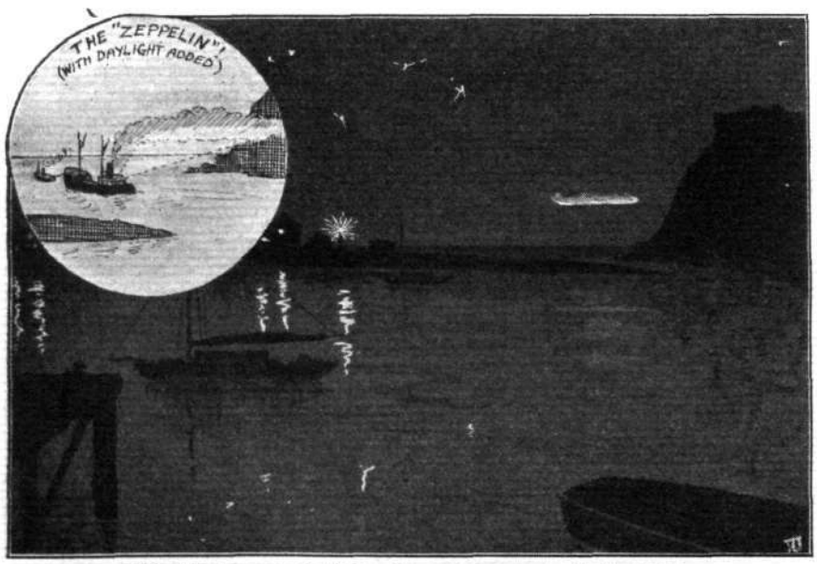
Talking about Manton reminds me that a notice on the blackboard at Hendon announced that this well-known pilot was giving a lecture in the pilots' room on Friday last. This, I believe, is quite a feature on windy days when it is out of the question doing any flying, and it is certainly an item in the curriculum which might be copied with advantage by other establishments, for it is to be presumed that quite a number of the pupils joining the various schools would profit by a few lectures on the theory of flying. Although the majority of the school instructors do not probably profess to be deep mathematicians, all of them would undoubtedly have sufficient knowledge of the theoretical side of the aeroplane to give their pupils a general idea of the why and wherefore of a flying machine.

"ÆOLUS."



The Teignmouth "Zep." as she appeared at night.

FLIGHT

MORE TESTIMONY TO R.F.C.

IN the summary of the work of the British Expeditionary Force issued by the Press Bureau on Tuesday, was included the following reference to the work of the Royal Flying Corps. It also contains the definite assurance that so far the Zeppelins have not been seen above the firing line, the Germans relying on their smaller non-rigid airships :—

"An incident which occurred some little time ago, during our retirement, is also worthy of record. On the 28th August, during the battle fought by the French along the Oise, between La Fere and Guise, one of the French commanders desired to make an air reconnaissance. It was found, however, that no observers were available. Wishing to help our Allies as much as possible, the British officer attached to this particular French Army volunteered to go up with a pilot to observe. He had never been in an aeroplane, but he made the ascent and produced a valuable reconnaissance report. Incidentally, he had a duel in the air at an altitude of 6,000 ft. with the observer of a German Taube monoplane which approached. He fired several shots, and drove off the hostile aeroplane. His action was much appreciated by the French.

"In view of the many statements being made in the Press as to the use of 'Zeppelins' against us, it is interesting to note that the Royal Flying Corps, who have been out on reconnaissances on every day since their arrival in France, have never seen a 'Zeppelin,' though airships of a non-rigid type have been seen on two occasions. Near the Marne, late one evening, two such were observed over the German forces. Aeroplanes were despatched against them, but in the darkness our pilots were uncertain of the airships' nationality and did not attack. It was afterwards made clear that they could not have been French. A week later an officer reconnoitring to the flank saw an airship over the German forces and opposite the French. It had no distinguishing mark, and was assumed to belong to the latter, though it is now known that it also must have been a German craft. The orders of the Royal Flying Corps are to attack 'Zeppelins' at once, and there is some disappointment at the absence of those targets."

Activity in German Works.

IT would be expected that German aircraft works are working at fairly high pressure just now, but that they would hardly be as busy as a message *from Berlin* to Amsterdam would appear to make out. According to this : "Each week one Zeppelin and seventy aeroplanes are completed. More than 10,000 men are said to have volunteered for service in the air fleet."

It should be some raid, when it does come off!

"Flight" Copyright

THE FUNERAL OF THE LATE FLIGHT-LIEUT. RICHARD T. GATES.—The scene at Hendon Church upon the arrival of the gun-carriage bearing the coffin.

THE ROYAL FLYING CORPS.

THE following appointments were announced by the Admiralty on the 17th inst. :—

Royal Naval Air Service.—Flight Lieuts. R. G. Lock and J. W. O. Dalgleish, to the "Pembroke III," additional, for Farnborough and Kingsnorth Airship Station respectively, to date August 1st.

Temporary Surgeon J. T. Evans to the "President," additional, for service at Hendon Air Station, to date September 17th.

Lieut. H. E. M. Watkins, R.N.R., entered as Flight Lieut. in the Royal Naval Air Service, and appointed to the "Pembroke," additional, for Calshot Naval Air Station, to date September 15th.

The following appointments were announced in a supplement to the *London Gazette* issued on the 18th inst. :—

R.F.C.—Military Wing.—Sec. Lieut. Francis C. Jenkins, Special Reserve, a Flying Officer, to be Officer in Charge of Mechanical Transport (graded as Flight Commander). August 29th.

Royal Naval Air Service.—The following gentleman has been granted a temporary commission as Flight Lieut. :—C. H. Butler (September 11th).

The following gentlemen have been granted temporary commissions as Flight Sub-Lieuts. :—R. P. Cannon (September 11th); P. B. Murray (September 12th).

The following gentleman has been appointed a Flight Sub-Lieut. for temporary service :—G. M. Dyott (September 12th).

Lieut. H. E. M. Watkins, R.N.R., to be Flight Lieut. (September 15th).

The following appointments were announced by the Admiralty on the 18 h inst. :—

Royal Naval Air Service.—The undermentioned have been entered as Probationary Flight Sub-Lieuts., and appointed as follows :—

D. Fron, F. G. T. Dawson, and V. Nicholl, to the "Pembroke," additional, for course of instruction at the Eastbourne Aviation Co.'s School, September 16th; A. F. Bettington, M. E. A. Wright, and J. J. Petre, to the "Pembroke," additional, for course of instruction at the Eastbourne Aviation Co.'s School, September 17th.

B. L. Huskisson and R. J. F. Tench entered as Probationary Flight Sub-Lieuts., September 17th.

Royal Naval Volunteer Reserve.—Temporary commissions have been granted as follows :—

Lieuts.—W. P. Kent and E. L. Goodman, to the "Pembroke," additional, for duty in connection with Royal Naval Air Service, September 17th.

Sub-Lieut.—M. J. James, to the "Pembroke," additional, for Central Air Station, Sheerness, September 17th.

The following appointments were announced by the Admiralty on the 19th inst. :—

Royal Naval Air Service.—Probationary Flight Sub-Lieuts.—The undermentioned officers have been confirmed in the rank of Flight Sub-Lieut. and reappointed as follows: E. B. Beaumann, R. J. J. Hope-Vere, R. Whitehead, to the "Pembroke," additional, for Hendon Naval Air Station; J. P. Wilson, H. Stewart, D. Murray, and G. B. Dacre, to the "Pembroke," additional, for Calshot Naval Air Station, all to date September 16th.

The undermentioned have been confirmed in the rank of Flight Sub-Lieut., promoted to the rank of Flight Lieut., and reappointed as follows: H. C. Fuller, to the "Pembroke," additional, for Farnborough Airship Station, August 28th; A. Nickerson, to the "Pembroke," additional, for Eastchurch Naval Flying School, September 14th; W. H. Wilson, to the "Pembroke," additional, for Eastchurch Naval Flying School, September 15th.

Royal Naval Volunteer Reserve.—Archibald W. Field has been granted a temporary commission as Lieut., and appointed to the "Pembroke," additional, for duty in connection with the R.N. Air Service, September 17th.

The following appointments were announced in a supplement to the *London Gazette*, issued on the 21st inst. :—

R.F.C.—Military Wing.—To be Flying Officers, September 12th, 1914: Lieut. Albert E. Morgan, 6th Batt. Royal Fusiliers (City of London Regt.); *Lieut. Lionel W. B. Rees, R.A.; *Lieut. Cedric Y. McDonald, Seaforth Highlanders (Ross-shire Buffs, Duke of Albany's); *Second-Lieut. George A. K. Lawrence, R.A.; *Lieut. Jack A. Cunningham, R.A.; *Lieut. John E. Tennant, Scots Guards; *Lieut. Barry F. Moore, the Royal Warwickshire Regt.); *Lieut. Edgar R. Ludlow-Hewitt, Royal Irish Rifles; *Lieut. John B. T. Leighton, Scots Guards; *Lieut. Kenneth Rawson Smith, R.A.; Second-Lieut. Sydney W. Smith, R.A. Special Reserve.

The following appointments were announced by the Admiralty on the 21st inst. :—

Royal Naval Air Service.—Probationary Flight Sub-Lieut. B. L. Huskisson, to the "Pembroke," additional, for course of instruction at the Eastbourne Aviation Co.'s School, September 20th.

The following appointments were announced in the *London Gazette* of the 22nd inst. :—

R.F.C.—Military Wing.—The undermentioned temporary appointments are made. Dated September 12th, 1914 :—

Flight Commanders.—Capt. Seaton D. Massy, 29th Punjabis, Indian Army; Capt. Cuthbert G. Hoare, 39th King George's Own Central India Horse, Indian Army; and Lieut. Cyril L. N. Newall, 2nd King Edward's Own Gurkha Rifles (the Sirmoor Rifles), Indian Army, and is granted the temporary rank of Captain.

R.F.C.—Military Wing.—*Special Reserve of Officers.*—The notification which appeared in the *London Gazette*, dated August 14th, 1914, appointing John Gordon Miller and Mark Dawson Second Lieuts. (on probation), dated August 15th, 1914, is cancelled.

The following were announced by the Admiralty on the 22nd inst. :

Messrs. K. Symes, H. Perrin, and F. C. H. C. Sinclair have been granted temporary commissions as Lieutenants, R.N.V.R.; and Messrs. G. C. Williams, W. Wells-Hood, N. Mitchell, and Sir Maxwell Monson have been granted temporary commissions as Sub-Lieutenants, R.N.V.R., and all appointed to the "Pembroke," additional, for duty in connection with Naval Air Service. To date September 21st.

The following was announced by the Admiralty on the 23rd inst. :—

Royal Naval Air Service.—Late Lieutenant C. Hornby, enterered as Flight Lieutenant, for temporary service, and appointed to the Pembroke, additional, for Eastchurch Air Station, September 22nd.

* To be seconded.

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R.F.C. Roll of Honour.

IN the list of casualties issued on Tuesday night was the following :—

Officers unofficially reported killed :—

Bayly, Lieut. C. G. G., Royal Flying Corps.

Waterfall, Second-Lieut. V., Royal Flying Corps.

In the list of casualties issued on Wednesday evening was the following :—

Officer previously reported missing, now believed to be a prisoner of war :—

Lindop, Lieut. V. S. E., Royal Flying Corps.

Commander Samson's Exploit.

THAT the work of the Royal Naval Air Service is not by any means confined to the air is shown by the following *communique* issued by the Admiralty last week :—"On the 16th (Wednesday) Commander Samson, with a small armoured motor car force attached to the Naval Flying Corps, encountered a patrol of five Uhlans near Doullens [near Amiens], killing four and wounding and capturing the fifth. The British force suffered no casualties."

Col. Holden at the War Office.

IN the *London Gazette* of the 22nd inst. it was notified that Col. H. C. L. Holden, C.B, has been temporarily appointed an Assistant Director at the War Office. It is hardly necessary to remind our readers that Col. Holden is Vice-Chairman of the Royal Aero Club.

"Beta" Over London.

ON Tuesday, Wednesday and Thursday, the airship "Beta" carried out a number of evolutions over the Metropolis. After circling above St. Paul's, Buckingham Palace, and other prominent places the airship came down very low when in the neighbourhood of Trafalgar Square, and then rose to a great height before disappearing in the haze. The King and Queen watched the movements of the airship with great interest from Buckingham Palace.

FLIGHT

AIRCRAFT AND THE WAR.

IN the summary of Sir John French's report on the work of the Royal Flying Corps, given in our last issue, it was stated that five enemy aircraft had been brought down by our airmen, but according to a despatch from a *Times* correspondent at Senlis up to last Friday the number had been augmented to 17. The despatch, which is given below, throws some interesting sidelights on the work of the R.F.C. in France :—

"'It's the greatest fun in the world.' Thus a member of the British Flying Corps with its spread wings embroidered on his tunic. Yesterday he flew over the German lines at the River Aisne.

"He was sniped at by a hundred sharpshooters and blazed at by guns throwing a shell specially designed for this work. Several of the bullets pierced the wings of his plane; a shell burst close beside him sending him reeling sideways, but he continued and finished his reconnaissance, marked the placing of the great guns, the lines of the trenches, the direction of the shell fire—even at one moment swooped down close to a wood where artillery was concealed, taking almost unthinkable risks.

"I wrung this story, not from himself—that would require the proverbial wild horses—but from a friend to whom it had been casually confided. I ventured to mention that I was aware of it. The answer was characteristic. 'A hundred men have done the same.' I am able to say that almost every member of our corps has been fired on not once but dozens of times. During the course of almost every aerial reconnaissance bullets pierce some part of the plane. No work so risky that our airmen have not essayed it, and they have won priceless information.

"The enemy's airmen now scarcely attempt to combat with this corps. I heard an airman complain yesterday that during the past fortnight every German he has encountered has fled away from him. 'I chased one of them for miles,' he declared, 'but he escaped me in the end. They have fast engines.' Already 17 German aeroplanes have, I am told, been destroyed by British airmen. As on the sea, so in the air the German has to a large extent been driven within the shelter of his big guns."

Another despatch from the *Times* correspondent gives details of a thrilling duel between a British and a German pilot in mid-air :—

"A German aeroplane, flying high, visited the British lines with the object of reconnoitring. As the machine hovered overhead, well out of reach of fire, a British airman shot up to the attack. The German saw his adversary and attempted to attack him from above. Shots were fired but they missed their mark.

"The British plane swept in a wide semi-circle around the adversary, mounting steadily. The German tried to swoop in order to open fire at close range from above. A sudden, giddy manœuvring of both machines! Shots! Another swift change of position, German and Britisher almost at the same altitude but out of range of one another and each fighting for the higher place. A rushing together, the two machines far up now, looking exactly like great birds in combat. . . . The distant sound of shooting. . . .

"Then a great struggle up and down, a darting hither and thither, each airman determined to win the advantage over his foe. . . . The machines advance and retire. . . . Suddenly the Britisher swings above. . . . The German reels and seems to stagger . . . and then, travelling more slowly than sight, the sound of shots. The German descends slowly to the ground. He is wounded."

The last point was also commented on by the *Observer's* correspondent at Bordeaux, who said :—

"It must be mentioned that the enemy have lost the valuable scouting service furnished by aeroplanes. German prisoners who have arrived at Troyes state that the German aviators are no longer flying, because of the lack of fuel. On the other hand, the French aviators do useful work, having destroyed numbers of provision trains."

The following entries in a diary kept by an inhabitant of Crepy-en-Valois, and quoted in the *Daily Telegraph*, shows the almost continuous use which is being made of their aeroplanes by the Germans :—

"Sept. 1.—A cannonade. Arrival of Uhlan and cyclist patrols. German aeroplane drops a bomb. Functionaries run for it, and with them most of the population. Out of 5,200 only 1,400 left.

"Sept. 7.—German aeroplane flies over town and drops a bomb on a factory now transformed into a hospital. At half-past nine patrol of French Hussars arrives. At four o'clock a German aeroplane is brought down near the station. At the same hour the French Hussars blow up, in the waste ground near the station, 5,000 shells left behind by the Germans.

"Sept. 8.—More firing towards Nanteuil. A German aeroplane takes fire and falls near Feignies."

That the French aircraft are also doing good work is shown by the following remarks of a German Artillery lieutenant, who is at present a prisoner in France.

"We hope a decisive action will put an end to this situation. Even at night our troops cannot rest. A French aviator dropped four bombs last night, and three exploded, killing and wounding twenty horses, killing four men and wounding eight."

That the French pilots do not lack initiative is illustrated by an incident recounted to a *Daily Telegraph* correspondent by a corporal of the Chasseurs d'Afrique.

"A temporary aerodrome had been established at ——, whence daily excursions were made to discover the German movements. While on one of these expeditions an aviator observed the movement of some guns, and thinking they might be brought into immediate operation against the French batteries, which had already been harassing the Germans, he flew low to draw their fire and so disclose their position at once to the French. Five times in rapid succession the Germans fired on the aeroplane. But each shell exploded far behind the aeroplane, which suffered no harm. The manœuvre was absolutely successful. The French gunners soon found the mark, and we were not troubled by artillery from that quarter. The aeroplane returned to the aero park safe and sound."

In this connection may also be mentioned the exploits of Vedrines as told in a letter written by a soldier in a French engineer regiment.

"This morning, while our convoy was leaving the town, a German aeroplane flew over us. We fired on it but could not bring it down. Then M. Vedrines started off in a 180 h.p. monoplane and pursued it. M. Vedrines rose to a height of 6,000 feet and brought the Taube down with a mitrailleuse. This is the twenty-first German aeroplane destroyed and the second brought down by M. Vedrines in the space of three days."

Curiously on the day this was published the German official war news announced "the well-known French aviator, M. Vedrines, has been tried for treason and shot."

Another item of the German official war news which lacks confirmation, is to the effect that on the 18th inst. three aviators flew over Paris and killed a number of persons by means of bombs. The aviators escaped, but several persons were killed and injured by the shots aimed at them.

In a thrilling despatch describing the state of the country after the German retreat from Soissons, Mr. Richard Harding Davies, of the *New York Tribune*, stated that among the abandoned *materiel* was a very large number of motor vehicles and "two shattered German airships."

Sir Alfred Sharpe, in a long despatch to the *Daily Chronicle*, also tells in the following words of an incident which he witnessed at Soissons—

"I left Soissons during a regular bouquet of shells, which went humming over the town and exploded in the outskirts, setting fire to a house. As I left a German aeroplane passed over the French positions at a great height.

"A variety of guns tried their luck, but nothing reached it. A second aeroplane followed half an hour later, and both eventually returned to the German side."

Mr. E. Ashmead-Bartlett writing to the *Daily Telegraph* on Sunday, from Rheims, regarding the destruction of the cathedral, mentions that suddenly a German biplane came hovering over the town like a huge black eagle ready to pounce on its prey. It flew very high, and the French soldiers did not take the trouble to fire on it. After circling over the cathedral it passed back into the German lines, doubtless to announce the progress of their sacrilegious work to the artillery.

Mr. Hamilton Fyfe in the *Daily Mail* quotes a British wounded soldier as saying that "the Germans don't seem to be able to handle their howitzer at all against aeroplanes. Ours get them time after time. One shot to give warning, then another 'trial bull,' then No. 3 and up goes the number, down comes the plane. But it's the maxims that do the most damage."

Also in this connection Mr. William Maxwell, in the *Daily Telegraph*, says :—

"A French aviator tells me that the gun used by the enemy against aeroplanes is excellent, and that at a height of 1,800 metres no aircraft would be safe if the aim was accurate. Every movement of the German forces is seen and reported. He does not believe in aeroplanes chasing one another. 'It is a stupid and useless game that could succeed only by the merest chance.'"

According to the *Hamburger Fremdenblatt*, when the Germans entered Rheims "20 monoplanes, 10 biplanes, and 40 Gnome motors of best quality were seized. The value of the capture amounted to about one million marks (£50,000).

Reports from Ardenburg, near Flushing, state that during the night of the 16th inst. an airship operating a searchlight was seen, but that it disappeared when fired on by the Dutch frontier guards.

A message from Amsterdam stated that a Taube aeroplane appeared over the city on the morning of the 17th inst. It approached from a western direction. A Belgian biplane gave chase, and the German aeroplane disappeared southwards.

A German official despatch published at Amsterdam states that the German military airships have fulfilled expectations, and asserts that, except for unavoidable damage, none of the airships had been destroyed or captured by the enemy.

Another message from Rotterdam on the same day gave the information that in the neighbourhood of Rochefort a German aeroplane had been shot down by Belgians. The two occupants, an officer and a civilian, were killed.

It was also reported that on the 18th another German Taube aeroplane flew over Antwerp and dropped a projectile. A greengrocer who was going to market was struck in the shoulder and had to be taken to hospital.

From Bordeaux on Saturday it was reported that near a railway station, the name of which was not given, a French aviator destroyed the permanent way and held up ten trains full of Germans who were ready to start. Another aviator destroyed two German food supply trains.

According to a message from Tokyo, the Japanese Government received a despatch dated September 17th from the Commander of the Second Japanese Squadron, reporting that aeroplanes attached to his squadron reconnoitred Kiaochau Bay on the previous day. Bombs were dropped on the enemy's ships in the harbour, the wireless station, and the electric power station. One of the bombs was seen to strike a large ship from which smoke was subsequently seen to arise.

A telegram from a correspondent of the *Morning Post* at Amsterdam stated that on the morning of September 22nd, an aeroplane flew over Maestricht from a south-western direction, and went north-east at a considerable height, dropping a bomb and causing considerable damage, but injuring nobody. No official information is forthcoming as to its nationality. Consternation naturally prevailed at Maestricht, and fragments of the bomb have been taken by the Dutch authorities.

A later message from the Hague states that the Dutch Government has decided on an official inquiry. When the result of the inquiry is known reports will be submitted to the German and Belgian Governments asking them whether the bombs were dropped from apparatus belonging to the Flying Corps of either of those countries. The Dutch people are very quiet about the matter except the people of Maestricht, who are excited and demand a speedy apology from the offender, whoever it may be.

Some further details regarding the daring raid by pilots of the Royal Naval Air Service on the Zeppelin sheds at Düsseldorf and Cologne, the official report regarding which is published on p. 972, are given in a message from a correspondent on the German frontier to the *Morning Post*.

"The return of the British aviators engaged in the daring enterprise across the frontier allows me to say something of interest concerning the Allies' co-operation in the war. On September 21st a force of cyclist carabiniers and armoured mo or cars proceeded east, their chief object being to clear the district of German patrols and make a safe base for the English aviators as close as possible to the German frontier.

"Very early in the morning five British aviators left, flying east. They were made the more confident in their mission by the knowledge that their Allies had provided for them half-way across the German frontiers a safe supply base, the locality of which naturally, I do not indicate."

A later message adds :—

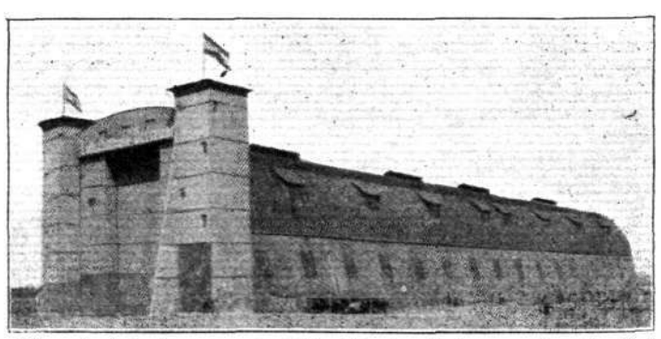
"Leaving at dawn the corps of aviators flew without misadventure to this base. The weather was clear and there was a little wind. At the base they divided into two parties, one party going to attack the Zeppelin hangars at Düsseldorf, the other to attack the hangars at Cologne. As far as the river Meuse the weather continued clear and favourable, but after the Meuse fog was encountered. The party having Cologne as their objective reached the city to find it enveloped in a thick fog. For an hour and a half the aviators circled around, afraid to discharge bombs at random for fear of damaging civilians, houses, or churches, but utterly unable to distinguish the Zeppelin hangars. Finally this section was obliged to turn back, having failed in its mission and not having discharged any bombs.

"The second section, having Düsseldorf as its objective, was more fortunate. The town was found to be wrapped in mist, but not fog. Descending very low, one aviator was able to distinguish the Zeppelin hangar, and discharged all his bombs upon it. That some effect was obtained he was sure, but he could not be certain that the flames which broke out were quelled or not. He is afraid that owing to the low elevation at which he discharged his bombs, about 400 feet, some of them did not explode owing to the operation of the time safety fuse, which is intended to safeguard against explosions so premature as to damage the aeroplane discharging the bombs. But partial success has to be recorded.

"All the aviators of both sections returned to the base or near to it, those not reaching it exactly finding armoured motor cars waiting to convoy them. All reached their destination safely last night. During the night two were out scouting for a Zeppelin ; they found nothing but a comet."

According to the *German* official wireless war news :—

"One of the enemy's aeroplanes dropped bombs near the Düsseldorf airship shed, but no damage was done."



The airship hangar at Düsseldorf which was bombarded by Lieut. Collet, R.N.A.S.

FLIGHT

"THE AEROPLANE OF TO-MORROW."

VARIABLE SURFACE, CAMBER AND INCIDENCE, AND THEIR EFFECT ON SUSTENTATION, SPEED AND SAFETY.

By L. DE BAZILLAC, Engineer, Ecole Superieure d'Aeronautique de Paris.

(*Concluded from page* 968.)

Gliding.—If we pass now to the descent with the motor shut off, there is no doubt that the smaller the minimum gliding angle γ, the greater the distance that the machine will be able to travel, the height at the commencement of glide being equal; consequently the greater will be the pilot's facility of choice of a landing place.

γ is given to us by the equation found above for ascending flight:

$$\frac{H}{W\cos i} - \tan i = \frac{R_x}{R_y} \text{ where } H=0\text{; hence: } \tan i = \tan\gamma = \frac{R_x}{R_y}.$$

We have:

$$R_y = K_y S V^2$$
$$R_x = (K_x S + \lambda) V^2$$

with $\lambda = \lambda_0 + \lambda_1 K S$.

$$\lambda_1 = \frac{K_1 S_1}{KS}.$$

Hence, $\tan\gamma = \frac{R_x}{R_y} = \frac{K_x + \frac{\lambda}{S}}{K_y} = \frac{K_x + \frac{\lambda_0 + K_1 S_1}{S}}{K_y}$. The curve (Fig. 9) graphically representing this formula or curve of inclination becomes straight again less quickly, in order to give $\frac{R_x}{R_y} = \infty$ as $\frac{\lambda_0 + K_1 S_1}{S}$ is smaller. It is more inclined in its lower part, as the lift is the greater for each angle of attack, the resistance to motion being equal.

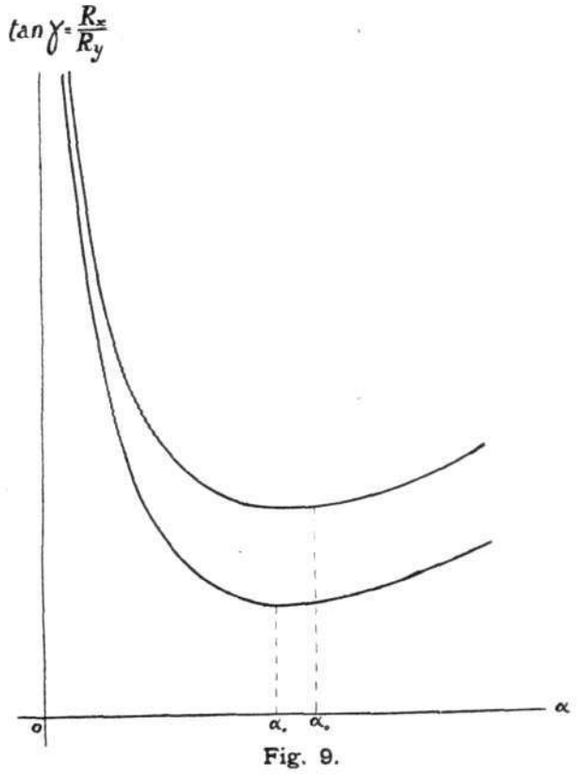


Fig. 9.

In order to diminish γ, as λ_0 remains approximately constant, and $K_1 S_1$ increases much more slowly than S, it is necessary to give to the surface the greatest possible value, and to increase the curvature with the angle of attack (the minimum of the curve, $\frac{R_x}{R_y}$ corresponds to the optimum angle of the machine; this angle is about 7° with actual machines). The velocity of translation is, in every case, inversely proportional to the square root of the lifting surface, and the larger the surface the smaller will be the speed of landing. The advantage of a larger surface is, therefore, very obvious in gliding. It becomes a primary condition for the angles near to the angle of zero incidence.

We know, in fact, that in order to pass from descent at 45°, which is done by certain aviators (motor shut off) to a steep fall, it is sufficient to produce with the actual machines a range of incidence angles in the neighbourhood of 1°, sometimes even lower than that.

This range of incidence angles is much more considerable for machines of large surface than for those of reduced surface. Let us examine again the curve of inclination, which represents tan γ. The larger $\left(\frac{\lambda_0 + K_1 S_1}{S}\right)$ is, the quicker this curve becomes straight again. If one wishes to give security, it is necessary to carry back, as far as possible, the limiting angle corresponding to the steep fall, and consequently reduce $\frac{\lambda_0 + K_1 S_1}{S}$, whether one increases S or diminishes λ_0. Now λ_0 arrives rapidly at a limit below which it cannot be reduced, and $K_1 S_1$ increases more slowly than S, therefore it will be necessary to increase S.

A large aerofoil, rationally curved for each angle of attack during descent with motor shut off, will, as a result, diminish the chances of diving, reduce the speed of landing, and diminish the gliding angle, whatever the angle of attack may be.

But it is evident that the larger the angle of attack, the slower will be the speed of landing. One has utilised, until now, only the angles corresponding to the first speed of flight, or the first branch of the curve of inclination, that is to say angles included between 0° and the optimum angle of the machine α_0. There exist, however, angles larger than the latter, and corresponding to the second branch (Fig. 10).

These angles characterise a second speed which experience would, as a last resort, be able to decide. Why do aviators seldom make use of these? The reason is simple.

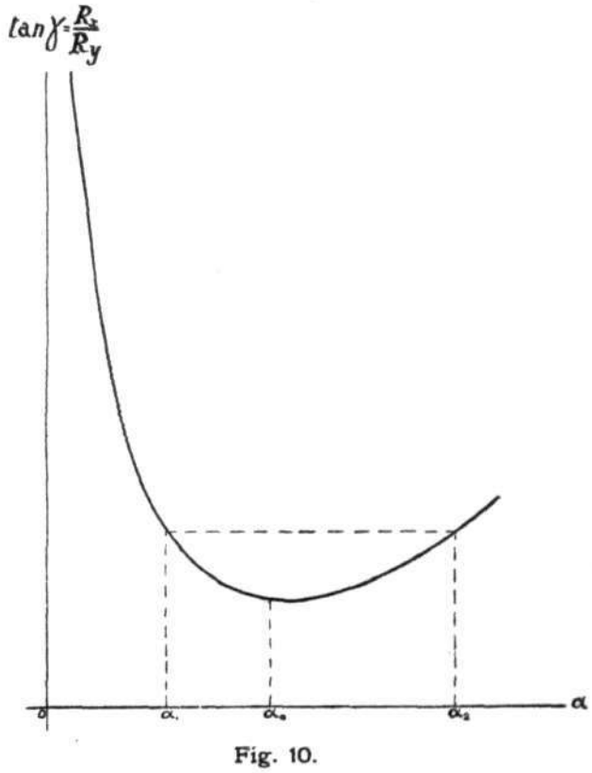


Fig. 10.

Suppose we had a machine having an angle of attack smaller than α_0; if one desires to ascend, it will be necessary, in every case, to increase this angle. If one wishes to descend, it will be necessary to diminish it. Now, if the angle of attack is larger than α_0 the contrary will happen. If one increases the angle of attack, the machine descends; if one decreases the angle of attack, the machine ascends; so that in order to manœuvre when α is greater than α_0 the pilot would have to make manœuvres the reverse of those he makes when $\alpha < \alpha_0$. Then it is necessary, in order to make use of the second speed, without fear of accidents, to reverse the controls from the moment when the gradient of the trajectory changes sense—that is to say, from the moment when an increase of the angle of attack corresponds to an increase of the ratio $\frac{R_x}{R_y}$.

In horizontal flight the reversal of the controls, or the utilisation of the second speed, would permit one to obtain a much greater range of variations of speed. It would render flight possible with the minimum of power; the certainty for the motor of working in

every case, without fatigue, and of running without seizing even in descent.

In gliding it would facilitate a slow landing. It would enable the minimum vertical speed of fall to be attained.

Let us suppose that the second speed is, by experience, realisable and stable, and let us consider an experimental curve of M. Eiffel as a function of the incidence (Fig. 11). We see that K_y maximum corresponds to an angle bordering on 20°. This angle would make the machine alight too obliquely. We will take as the maximum

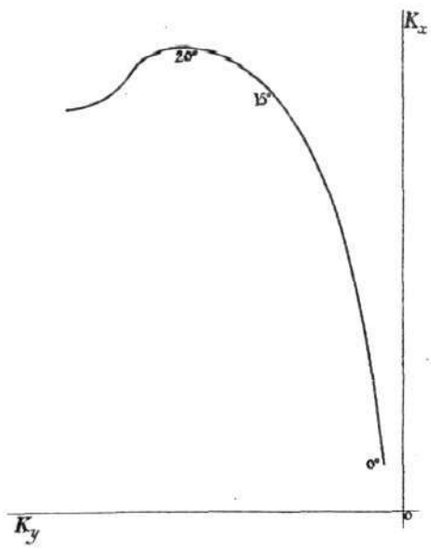


Fig. 11.

angle of attack for the glide an angle slightly smaller; for example, 15°, or the angle corresponding to the minimum speed of fall. This angle approaches α_0 with the increase of the surface and camber. We will select the camber for which the K_y corresponding to that angle is as large as possible. We shall find ourselves then, with the second speed, in the best possible conditions for landing.

We know the quarrel that has raged around the second speed, between its partisans and its detractors. Some of them have shown theoretically that it was not practicably realisable. It is important to apply calculations to concrete cases in order to obtain from experience their confirmation or their denial, experience pronouncing the final judgment in everything appertaining to applied science.

Whatever it be, the accentuation of the longitudinal V, resulting from the increase of the angle of attack with the second speed, will have a favourable effect on the automatic stability. The flight path of the machine will also be more fixed.

Note I.—If one wishes to make a rapid descent, it is evident that the conditions previously established must be reversed, and the surface of the wings must be flattened and reduced to the strictest minimum possible. We have seen that the optimum angle of the wings, taken separately, allows of the most rapid horizontal flight. For this reason, as well as to prevent a dive, it would be logical to take such an angle as the lower limiting angle to descend rapidly with the reduced surface. Nevertheless, immediately before landing, the wings must be extended and present the maximum surface which characterises slow landing. They will then support their highest pressure, and the drag component of this pressure will act as a powerful air brake. It is important to know their safe load.

When the machine lands, after a rapid descent, with reduced surface, at the optimum angle of the wings, it will have a speed V given by the relation: $W\gamma_1 = K_{x1}\, s\, V^2$, γ_1 being the gliding angle, K_{x1} the horizontal unit component corresponding to the optimum angle of the wings, maximum surface.

The pilot will then tilt up his elevator in order to give to the machine the maximum angle of attack and the maximum surface. (It is certain that the machine will not ascend again, since K_y will have attained its maximum, and can only decrease.)

At this moment the machine will still have, by virtue of its inertia, the speed V; the pressure on the wings will then be equal to

$$R_2 V^2 = \sqrt{K^2_{x2} + K^2_{y2}}\, S V^2 = \sqrt{K^2_{x2} + K^2_{y2}} \cdot \frac{S}{s} \cdot \frac{W\gamma_1}{K_{x1}}$$

R_2 being the total resistance, K_{x2}, K_{y2} the unit components corresponding to the maximum angle of attack.

In order that the safety of the machine may not be jeopardised it is necessary that the pressure be inferior to the load L, the safe load for the wings.

So that

$$Q > \frac{S}{s} \frac{W\gamma_1}{K_{x1}} \sqrt{K^2_{x2} + K^2_{y2}} \text{ and } Q > \frac{S}{s} \cdot \frac{W}{K_{y1}} \sqrt{K^2_{x2} + K^2_{y2}}.$$

The safe load must then be taken at as much larger as is the angle of attack at landing; surface, camber and weight will be larger also.

If Q remains constant one can increase the weight only on condition that one diminishes the range of the values which the angle of attack can take, *i.e.*, in diminishing the facility of manipulating the machine.

Nevertheless, whatever may be the safe load, the surfaces must, at the moment of landing, be such that the load per square metre of aerofoil does not exceed 25 kilogs. This condition seems to characterise the correct landing. It does not exclude the possibility of very great speeds in horizontal flight, if one bears in mind the employment of a surface that can be halved, and of a variable camber.

Note II.—It must be noted that for a fixed type of variable wing the ratio $\frac{V}{v}$ of the two speeds lower and higher corresponding to the two limiting angles of the glide (optimum angle of the wings in horizontal flight, and maximum angle of attack during gliding) is in proportion to $\sqrt{\frac{K_y}{k_y} \cdot \frac{S}{s}}$ (S and s being the maximum and minimum surfaces of the wings) and consequently constant.

We have, then, $\frac{V}{v} = \text{constant} = C$, and $V - v = \left[\frac{(C-1)}{C} \cdot V\right]$ will be as much larger as V the speed of horizontal flight is higher. This speed depends on the power utilized, as also on the shape and size of the wings.

If we suppose a surface capable of varying to the extent of half we have $\frac{S}{s} = 2$. If we suppose, further, that the greatest lifting force K_y can become equal to eighteen times the smallest, which is not impossible by the variation of the camber and the utilization of the second speed, we have further

$$\frac{K_y}{k_y} = 18, \text{ and } \frac{V}{v} = \sqrt{\frac{K_y}{k_y} \cdot \frac{S}{s}} = \sqrt{18 \times 2} = 6.$$

This ratio of flight speeds is twice as great as any obtained at the present day. It defines, then, the lowest and highest limiting speed of the glide which can be realised by a machine with a variable surface, camber and incidence.

Under the same conditions, we may presume the ratio $\frac{V}{V_1} = 5$ to define the lowest and highest limiting speeds of the horizontal flight with a motor sufficiently flexible, or with two motors of unequal power, working in conjunction.

Summing up, the greatest reserves of sustentation, safety and speed belong to the aeroplane that is endowed with a variable surface or camber, with a system of reversed controls, or with these three factors together.

If the ascent has to be rapid, the surface will be as large as possible, not exceeding the limiting surface, and rationally curved for each angle of attack. This ascent must be carried out at the angle α_m defined above, and which corresponds to the maximum vertical speed of ascent.

If the descent must be slow, the maximum surface, rationally curved, will be taken at the optimum angle of the machine, or, better, at the maximum gliding angle within the second speed. For rapid descent the surface must be flattened and reduced, in the same way as in horizontal flight, at normal speed, to the lowest possible minimum, at the optimum angle of the wings. The optimum angle of the wings will be, in every case, the lower limiting angle. For reconnaissance purposes, one will take the angle corresponding to the second branch of the curve of inclination, maximum surface with an arched profile, if one possesses a motor flexible enough and has the means of using the second speed.

Such are the advantages of the aeroplane with variable surface and camber, and some of the methods of obtaining them.

Among the qualities that one can look for in the Aeroplane of To-morrow, variable surface and camber are certainly the most desirable, in order that it shall be able to enter into everyday use, as regards transport.

That is why, without making pretension of here solving the problem of variable speed we have, at least, foreseen the direction in which the researches should be made.

Models

Edited by V. E. JOHNSON, M.A.

The Building of My First Power-Driven Machine.

By LEONARD H. SLATTER.

(*Continued from page* 970).

THE floats were next proceeded with, and although their very large size worried me at first, I soon got used to them. You will excuse me if I digress slightly here, but I should like to try and explain that feeling of "bigness" that attacks the novice when he starts to launch out into a larger machine. It struck me very forcibly nearly all the way through, and it was through reducing the somewhat large, as it appeared to me at first, *fuselage* that caused the fire disaster. As I had it at first, it would have been almost entirely immune from this danger, but letting my taste for "daintiness" swamp my common sense, I paid for it in full. If it had not been for this lesson, I should probably have underfloated the machine, and it is to this point I am coming.

Having calculated the size of floats necessary, working on a factor of flotation of two, I proceeded to make one. Of course, it appeared simply huge, but I had learnt my lesson! I knew the calculations were correct, and decided to let things stand. How they first appeared to me is very cleverly illustrated by the next photograph. The floats being closest to the camera, they are out of proportion to the rest of the machine and it really illustrates the point very well (Fig. 4). The floats themselves have a single step, and have slightly upturned prows. The centre of flotation of these floats was arranged to come as far back as possible, *i.e.*, as close to the c.g. as possible, in order to relieve the tail float of any unnecessary weight. This in turn allows a small float being placed under

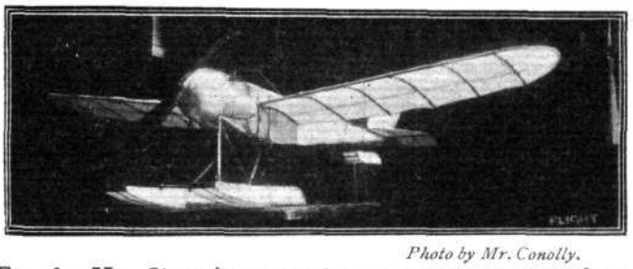


Photo by Mr. Conolly.

Fig. 4.—Mr. Slatter's power-driven model, as seen from underneath.

the tail, and thus the weight of this float does not have any great effect on the position of the c.g.

It might be of interest to note that the weight of the two main floats is not quite 5 ozs., and this for floats capable of floating 12 lbs. is a very satisfactory result. The strength of them can be gauged from the fact that on several occasions the machine has on her taxying trials charged up the banks without the slightest damage to the floats. A hint about the tail float: in the setting of the size of this float no flotation factor need be used. Make the float to carry the estimated load, and no more. Immediately the thrust comes on the tail float comes off the water, and if the centre of flotation of the main floats is not too far in advance of the c.g. it never touches again.

The suspension of the floats on this machine is absolutely rigid, as I had no time to spare to design a spring connection. This will form one of the many refinements I intend incorporating in my second attempt.

The main surfaces were the next things to be settled. The weight of the machine was in the neighbourhood of 5¾ lbs., and of course it was desirable to keep the unit loading down as low as possible without using excessively large planes.

The length of the *fuselage* proper was 4 ft. 6 ins., the total length of the machine was in the neighbourhood of 5 ft. 3 ins., and this restricted the span to about 6 ft. In order to have a correct minimum gap between the tail and main plane the chord could not exceed 12 ins. on the *fuselage*; that is to ensure the tail unit being totally unaffected by the air passing over the main planes. In order to get as big a chord as possible it led me to make the planes of the same plan form as a bat's wing. That is the chord increases from the root to the centre, where it has its maximum value, and again diminishes towards the tip. This shape not only relieves the general appearance from that atmosphere of rigidity expressed by the two edges being parallel, but also enabled me to get a suitable area without making the machine look unduly squat.

The chord at the root is 10 ins., rising to a maximum of 13½ ins., and the nett area is just over 6 sq. ft., thus giving a loading of just under a pound per sq. ft. The making of these wings represented my first attempt at making a double surfaced plane. However, acting on Mr. Grove's advice, I made all the ribs on a couple of jigs, with the result that the camber, &c., of either wing was identical. However, I fell into the trap of not inserting a sufficient number of ribs to prevent the silk sagging and giving an undulating camber. I should give as a maximum pitch of ribs no more than 3½ ins. In order to lighten the wing structure all the ribs need not be of the full section. Alternate ones can be in the nature of dummies, and are only needed at the hump of the camber. The wings are attached to the body by steel pins inserted in the ends of the main wing spars, and were originally braced top and bottom by two stays of 26 gauge steel wire. However, as the lower wires are taken forward to the chassis, which gave them a considerable forward rake, it necessitated the addition of a third upper wire taken to some point near the tail in order to prevent the planes jumping out of their sockets at the slightest provocation. The attachments of the bracing wire to the *cabane* are in the form of self-straining hooks, and form a quick erecting and tightening device at the same time.

The machine has taken just over three months to build in both spare time and time I have made spare, and altogether I can look back on the building of the machine with the greatest interest. The set of conditions met with in the building of a model such as this are altogether different from those met with in the making of the rubber-driven model.

In conclusion, I should just like to add a few words as to the behaviour of the machine on the two occasions I have had the model out. The first time was just prior to my leaving for my holidays. This formed the only trial that the machine was likely to get before taking it to the Welsh Harp for the hydro competition. Initially, this trial was made in order to test her taxying capabilities, the water and surrounding trees not allowing any attempt at a free flight. It was essential to know to what extent the torque affected the run in order to see if the flotational base was large enough.

Now as to what actually happened. Mr. Conolly and myself took the machine to Wimbledon very early in the morning in order to take advantage of the calm generally prevailing at this portion of the day.

The machine was safely transported between us, and it did not take long to get the plant going. This, combined with the attitude of the machine on the water, augured well for a successful start.

Having got the engine going strong, the machine was placed on the water, but before releasing it we took the precaution of throttling down the engine. Finally being released, the model took a semi-circular path and struck the shore about 20 yds. further down. On Mr. Conolly's suggestion, I slightly set the fin against the torque and attempted a second run.

This time I pointed the head more directly across the pond, still anticipating a circular path. Whilst waiting for the engine to speed up I inadvertently got hold of something hot, with the consequence that I released her somewhat prematurely. To our astonishment she made straight for the opposite shore.

At first her speed was somewhat reduced, and I sauntered round to meet her on the far side, nursing a burnt thumb. About half-way round I noticed her speed beginning to accelerate, and I also did likewise, and just managed to reach the point she was making for in time to stop her. The last quarter of the way across the machine was travelling all out, and I am not likely to readily forget the task of stopping a machine travelling at 25 m.p.h. The propeller seemed to stretch from wing-tip to wing-tip, and I do not seem to remember much till the propeller smashed itself across my arm. It seems that when I caught hold of the one wing and swung it ashore the machine whipped round, with the result mentioned above. Mr. Conolly and myself have each got a piece of that propeller to remind us of a "very gallant action." The stopping of the machine was absolutely compulsory, as it was going straight for a stone buttress.

Mr. Conolly vouches that the machine was clean off the water for the last yard or two. For myself I cannot say, as I hardly had time to steady myself, preparatory to stopping her, when she was on me like a "ton of bricks."

Luckily little or no damage resulted beyond the breaking of the propeller. The top *cabane* was slightly strained, due to me catching hold of the wing in stopping the machine.

These little faults were soon put right, and the machine was left all ready for the fray when I returned.

What happened at Hendon need not be mentioned here; suffice to say that I have never yet seen the Welsh Harp in a more perturbed state of mind.

The next trial took place a week after the competition date, again at Wimbledon. Having arisen very early we were out to do or die! The machine was going to get off this time, no matter with what resulting consequences. This time fate was against us

Photo by Mr. Conolly.

Fig. 5.—Mr. Slatter's power-driven model. Flotational tests, &c.

as far as the weather goes. It was blowing quite strong, but after getting up so early—incidentally, Mr. Conolly had trouble with the alarm clock and got up at 4.30 a.m.—there was nothing to do but go.

Our serious intentions were manifest in the solemn manner in which we photographed the machine prior to settling down to serious business (*see* Fig. 5).

In my opinion the machine was of no use if it wouldn't fly, so we were determined to test it in this respect as fully as possible. The plant starting up without the slightest coaxing, we looked as if our

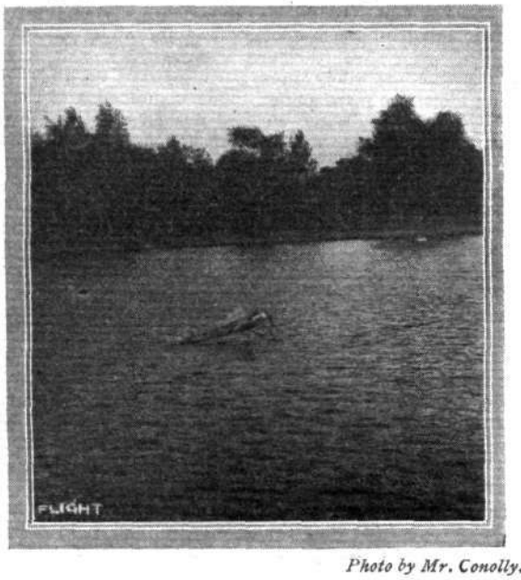


Photo by Mr. Conolly.

Fig. 6.—Mr. Slatter's power-driven model. Drifting after a brief flight.

desires were soon to be satisfied. Accordingly Mr. Conolly removed himself to the opposite bank to snap her immediately she rose. Probably due to him not being at hand when I started, the fact of the rudder not being biassed was entirely overlooked. Starting with the wind slightly on the beam, the model travelled about 20 yards straight out, and then a gust caught her broadside on and swung her round. Travelling with the wind now, she began to rise some 6 ins. or 12 ins. above the water. Almost immediately after she left the water the torque brought her round to the right. Of course, we didn't know the correct elevation, and it so happened that she was slightly under-elevated, which resulted in her slightly dropping on the turn, with the result that the wing-tip touched and brought her down with a bump.

The propeller struck the water, resulting in the stoppage of the engine. The machine at once commenced to drift in, and continued to do so until a more severe gust than usual turned her right over. Previous to this Mr. Conolly had run back and snapped her in "mid ocean" (Fig. 6). The final salvage operations were carefully carried out by Mr. Conolly, who thoroughly enjoyed himself. Having had enough experiences of this nature, I was only too glad to have an understudy on this occasion.

Needless to say, operations were suspended for the day, but the plant seems no worse for its ducking, and starts up quite readily.

The machine in general is now undergoing extensive alteration and repairs, but I hope to have her out by the time of the competition next October.

Query.

Will Mr. C. C. Horner kindly communicate his present address to us per p.c., as we have a letter awaiting to be forwarded to him?

KITE AND MODEL AEROPLANE ASSOCIATION.

Official Notices.

Clarke Cup and Weston Cup.—Owing to lack of entries, the judges decided to postpone these competitions until more favourable circumstances will permit of a bigger entry.

Laboratory Competition.—Please forward all entries intended for this competition as soon as possible, so that definite arrangements may be made, and a date settled.

All communications regarding models should be addressed to 46, Templesheen Road, East Sheen, S.W. H. A. LYCHE.

AFFILIATED MODEL CLUBS DIARY.

Club reports of chief work done will be published monthly for the future. Secretaries' reports, to be included, must reach the Editor on the last Monday in each month.

Sheffield Ae.C. (41, CONISTON ROAD, ABBEYDALE, SHEFFIELD).

OCT. 6TH, general meeting at Mr. Broomhead's, Leopold Street, 7.30 p.m. Chief subject for consideration, the change in rules governing the "Colver Cup," &c., &c. Prospective members will be welcomed at the meeting.

UNAFFILIATED CLUBS.

Finsbury Park and District (66, ELFORT ROAD, HIGHBURY, N.).

SEPT. 26TH, Distance and Duration Contests, all types, Finsbury Park, 5 p.m. Practice flying, 3 p.m.

S. Eastern Model Ae.C. (154, PECKHAM RYE, S.E.).

SEPT. 27TH, Blackheath (weather permitting), at 8.15 a.m., the South-Eastern Trophy Competition for single-propeller r.o.g. models. Those members who have been unable to enter will greatly oblige by acting as stewards.

AERONAUTICAL SOCIETY OF GREAT BRITAIN.

Associate Fellowship Election.—As a result of the recent election, the following have been elected Associate Fellows of the Society:—Major B. F. S. Baden-Powell, Leonard Bairstow, Harold Bolas, F. E. Cowlin, A. Fage, C. R. Fairey, Lieut. J. N. Fletcher, R.F.C., Major H. Musgrave, R.F.C., J. L. Nayler, S. J. Norton, M. A. S. Riach, G. T. Richards, J. Schiere, F. J. Selby, and N. A. V. Tonnstein.

BERTRAM G. COOPER, Secretary.

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